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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED
BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1914.

(No. 41; Nos. 39309 to 39681.)

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BUREAU OF PLANT INDUSTRY.

Chief of Bureau, WILLIAM A. TAYLOR.
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FOREIGN SEED AND PLANT INTRODUCTION.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1914 (NO. 41; NOS. 39309 TO 39681).

INTRODUCTORY STATEMENT.

Although a small one, this inventory contains descriptions of some very interesting new material.

A low-growing creeping legume (*Dolichos hosei*, the Sarawak bean), which keeps down the weeds successfully in rubber plantations in the Malay States and should be of value in citrus orchards in Florida (S. P. I. No. 39335), and a wild prostrate form of alfalfa from the mountains between Hotien, Honan, and Luanfu, Shansi, China, will interest those experimenting with forage and cover crops (S. P. I. No. 39426).

The *Rosa odorata gigantea* (S. P. I. No. 39593), a giant among the roses from the Himalayas, with white flowers 6 inches across and a more rampant growth than the Cherokee rose and which has already shown that it will cross on other roses, ought to open the way for a new race of climbing roses in the South.

Eight varieties of sweet potato from the Cuba Experiment Station (S. P. I. Nos. 39610 to 39617), among them a prize winner of the Camaguey exhibition, will be wanted for trial by southern stations, and the wild tomato of Funchal (S. P. I. No. 39362), introduced by Mr. Gable from the driest rocky locations on the island of Madeira, where it grows wild and is believed to be from the original stock from which the cultivated tomato has sprung, will probably interest tomato breeders because of its drought-resistant qualities.

An unusually large collection of Chinese barleys, 38 varieties (S. P. I. Nos. 39494 to 39531), presented by the special envoy for foreign affairs, through the United States consul general at Shanghai, may yield good new varieties for some sections of this country.

NOTE.—This bulletin is a record of new or little-known seeds or plants procured mostly from abroad. It is intended for distribution to agricultural experiment stations and the more important private cooperators.

The chingma, the so-called China jute or Tientsin fiber (S. P. I. No. 39361), which yields a harsher and stronger fiber than the Indian jute and is used for carpet making, has been introduced from Ichang, China, and, if improved methods for extracting the fiber can be devised, may prove a profitable crop in America.

The attempt to save from extinction the last survivor of a species of tree closely related to our cultivated cotton, in order that hybrids with it may be made, has a great deal more than a sentimental interest. Seeds from the dying tree of this *Kokia drynarioides* (S. P. I. No. 39354) from Molokai, have been secured by Mr. Rock, of Hawaii.

The doorn boom of the South Africa veldt (*Acacia horrida*), the most widely distributed of all South African trees and the characteristic landscape tree in the pictures of big-game hunting in South Africa, appears to be a promising hedge plant and windbreak for trial in Texas (S. P. I. No. 39355).

The most beautiful of the flowering trees of Java (*Spathodea campanulata*), introduced from Africa into that island, which is in bloom there almost throughout the whole year, was sent in by Dr. B. T. Galloway several years ago and has flowered in southern Florida, and new importations of seed have consequently been made (S. P. I. No. 39415). To Mr. W. M. Matheson will go the honor of the first introduction of this tree into Florida, for he brought it in earlier from Jamaica.

The success of various species of Tamarix as low windbreaks in Texas has made it advisable to get together the other species of this genus, and two of these have been imported from the desert of Farab, Bokhara, Turkestan (S. P. I. Nos. 39628 and 39629).

The accounts of the Mahwa tree (*Madhuca indica*, S. P. I. No. 39325), the fleshy flowers of which produce food annually in India worth over a million dollars, have made it seem desirable to introduce it into Florida and Porto Rico, even though these dried flowers have an unpleasant odor of mice and appear to be somewhat indigestible. The value of this tree seems truly remarkable, and it deserves investigation from an American point of view.

The rapid growth of avocado groves in California and Florida and the growing realization that a fruit which produces over 29 percent of fat is more than a mere table delicacy make the dissemination of the Guatemalan and Mexican hard-shelled spring and winter ripening seedlings of remarkable shipping qualities, which have in recent years been grown in California, of much more than passing interest (S. P. I. Nos. 39369 to 39375).

American Consul Charles K. Moser's discovery of a delicious Ceylonese mango almost as large as a coconut, with a striking red blush and almost no fiber, shows that all of the most desirable types of the mango varieties of India evidently can not be secured through correspondence (S. P. I. No. 39485).

The popularity of the Paraguayan fruit *Feijoa sellowiana* and its unexpected hardiness in the South make a large-fruited seedling of especial importance at this time (S. P. I. No. 39555).

The rosy fleshed anona called Ilama (*Annona diversifolia*), considered one of the best of this important class of fruits (S. P. I. No. 39567), and the *Annona purpurea* (S. P. I. No. 39358), a new, large, aromatic-fruited species, add two important fruit plants to the subtropical collection.

The Chinese wampi (*Claucena lansium*) has shown that it will grown in Florida, and either its pale yellow rough-skinned fruits of aromatic flavor or its ability as a stock to carry the grapefruit may make it of value (S. P. I. No. 39568).

The tropical ciruelas ,*Spondias lutea* (S. P. I. No. 39563), which are popular in the markets of Bogota three months of the year, should, if one can judge by the success of other species of the same genus there, thrive well in Florida.

A study seems not yet to have been made of the varieties of coconut and their comparative value for the different purposes to which coconuts are put, and the introduction by Mr. H. Pittier, from Punta Burica, Panama, of a rare variety rich in oil (S. P. I. No. 39356) emphasizes the need of a thorough study of this immensely valuable food plant.

The possible use of new stocks for the pear and an investigation of the origin of the blight-proof Kieffer and LeConte pears will make necessary close comparisons of the different Chinese species, and pear breeders will want plants coming from the original trees of *Pyrus betulaefolia* which were sent to Kew and the Arnold Arboretum by Dr. Bretschneider in 1882 (S. P. I. Nos. 39547 and 39548); also plants of *Pyrus bretschneideri* (S. P. I. No. 39538), which, at the arboretum, in addition to being a remarkable ornamental, yields yellow globose, juicy fruits of fair quality, from which it is thought by Prof. Sargent the best of the Chinese cultivated pears have been derived; and *Pyrus ovoidea* (S. P. I. No. 39541), which is possibly the parent of the Kieffer and has large, abundant flowers and foliage that colors scarlet in autumn; and particularly *Pyrus phaeocarpa* (S. P. I. No. 39540), with pyriform fruits, which has never been attacked by pear blight, although a large tree of it has been standing in the arboretum for many years, exposed to infection.

The woolly aphis is a serious pest of apple orchards in Chile, but four immune varieties of apple have been found there and extensively propagated by a large nursery firm at Santiago. They are deserving of trial in this country (S. P. I. Nos. 39320 to 39323).

Mr. Frank N. Meyer, Agricultural Explorer of the Department of Agriculture, has discovered in the Shansi Province of China a true wild apricot, the kernels of which are pickled in brine and eaten as appetizers by the natives (S. P. I. No. 39439), and in the mountains south of Sianfu, Shensi Province (S. P. I. No. 39428), and again in Chaoyu, Shansi Province (S. P. I. No. 39544), a small, sour, but freestone wild peach, which may be of decided importance to peach breeders. *Prinsepia uniflora*, which he found near Fucheng, a spiny shrub, very decorative in May, and bearing fruits which resemble cherries, being dark red in color, quite juicy, and sour, may add a useful hardy fruiting shrub to the gardens of this country (S. P. I. No. 39432). A Prinsepia introduced by Wilson has proved hardy in the Arnold Arboretum.

Chinese place and plant names in this inventory have been brought, as far as possible, into accord with the best authorities, the geographic names (except when fixed by decisions of the United States Geographic Board) being given in the form accepted by the Chinese Ministry of Communications Postal Guide. Many of the smaller village names, however, are not listed therein, and in all such cases the location of the village is given with reference to the nearest town mentioned in that work.

The manuscript of this inventory has been prepared by Miss May Riley, the botanical determinations of seeds introduced have been made and the notes on geographic distribution compiled by Mr. H. C. Skeels, and the descriptive notes arranged by Mr. S. C. Stuntz, who has also had general supervision of this inventory.

David Fairchild,
Agricultural Explorer in Charge.

Office of Foreign Seed and Plant Introduction,
Washington, D. C., November 25, 1916.

INVENTORY.

39309. MANGIFERA INDICA L. Anacardiaceæ. **Mango.**

From Punjab, India. Presented by Mr. A. H. Brydges, Loomis, Cal. Received at the Plant Introduction Field Station, Chico, Cal.

"Seeds from the village of Aliwal, District of Jhalandar, Punjab, India. They are the earliest fruiting varieties in that locality, ripening in August." (*Brydges.*)

39310 to 39313. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Hamburg, Germany. Presented by the Botanische Staats-Institut.

39310. From German East Africa.

39311. From Kamerun.

39312. From Togo.

39313. From German East Africa.

39314. DOLICHOS LABLAB L. Fabaceæ. **Bonavist bean.**

From Mbale Sana, Lumbwa, British East Africa. Presented by Mrs. E. L. Smith. Received October 3, 1914.

"*Njai*, a Kikuyu bean much liked and valued by the natives." (*Mrs. Smith.*)

39315 to 39317.

From Boulder, Colo. Presented by Mr. Theo. D. A. Cockerell. Received October 1, 1914. Quoted notes by Mr. Cockerell, except as otherwise indicated.

39315 and 39316. PENTSTEMON HUMILIS Nutt. Scrophulariaceæ.

"From Flagstaff Hill." Low-branching perennial occurring in the Rocky Mountains and westward. It is well suited for the hardy border, but does not usually grow higher than 6 inches. The flowers, which are one-half inch in length, are rather narrow and of a deep-blue color, sometimes ranging to white. It grows well in fairly good soil. The flower stalks should be supported by light stakes to keep them from being blown about by the winds or borne down by heavy waterings. (Adapted from *Bailey, Cyclopedia of American Horticulture,* and *McLaren, Gardening in California.*)

39315. "A very beautiful variation with bright blue flowers, a different shade of color from the normal. It may have to be taken to the F^2 generation to show its true colors."

39316. "A variety with very pale flowers. Probably will not appear with pale color until the F^2 generation.

39315 to 39317—Con. (Quoted notes by Mr. T. D. A. Cockerell.)

39317. ROSA ANGUSTIARUM Cockerell. Rosaceæ. **Rose.**

"From Wood Mountain, Colo., September, 1914 (D. M. Andrews). Published as *Rosa pratincola angustiarum* in Daniels' Flora of Boulder, Colo., and Vicinity (University of Missouri Studies, 1911, p. 148). I now consider it a distinct species. The fruits vary in shape on the same branch."

39318 and 39319.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison. Received October 1, 1914.

39318. ANGOPHORA LANCEOLATA Cavanilles. Myrtaceæ. **Apple myrtle.**

"An evergreen tree found in New South Wales and Queensland, 24 to 36 inches in diameter, 70 to 80 feet in height. The tree produces a kino or gum which, when freshly exuded, has (like other Angophora and a few Eucalyptus kinos) a smell like sour wine, but more disagreeable. Even when quite freshly exuded it is exceedingly brittle. It has a bright fracture, and is of a ruby color, with a tinge of brown. Color of powder orange-brown. Water acts but slowly upon it, forming a pale reddish brown solution, and leaving abundance of sediment. Timber strong, heavy, subject to gum veins; used for naves of wheels, slabs, rough building, and fuel." (*Maiden, Useful Native Plants of Australia, pp. 236 and 376.*)

39319. CHENOPODIUM sp. Chenopodiaceæ.

"Said to grow to a height of 11 feet in arid country; a splendid fodder for dairy stock." (*Harrison.*)

39320 to 39323. MALUS SYLVESTRIS Miller. Malaceæ. Apple.

(*Pyrus malus* L.)

From Santiago, Chile. Presented by Señor Salvador Izquierdo.

"These scions are of apple varieties which are free from the woolly aphis and are cultivated with much success in Santa Ines." (*Izquierdo.*)

39320. No. 993. *Gobernador Civit.*

39321. No. 991. *Esquisita de Santa Ines.*

39322. No. 994. *Huidobro.*

39323. No. 984. *Admirable de Otoño.*

39324 and 39325.

From Allahabad, India. Presented by Mr. William Bembower, Ewing Christian College. Received October 8, 1914.

39324. DIOSPYROS NIGRICANS Wallich. Diospyraceæ.

"A tree 50 feet high, with many lax cinereous, glabrescent branches; young shoots and petioles minutely puberulous. Leaves oval oblong, much acuminate at apex, somewhat narrowed at base, alternate, turning black when dry, firmly membranous, glabrous, except on midrib which is puberulous and depressed on the upper surface; lateral veins and net veins delicate, not conspicuous above; 3 to 5 inches long by 1 to 1¾ inches wide; petioles one-tenth to one-seventh inch long.

"Male plants. Flowers in few flowered (3 to 6) short axillary puberulous cymes, subsessile, one-quarter to one-third inch long, bracts small, imbricated. Calyx with scattered short ferruginous hairs outside, shortly 4-lobed. Corolla with few scattered short hairs outside,

39324 and 39325—Continued.

deeply (two-thirds) lobed, slender; lobes reflexed at apex. Stamens 32 in one case, very unequal, many minute, glabrous.

"Female plants. Fruit glabrous, ovoid or globose, pointed at apex, about two-thirds inch long, 4-celled, 4-seeded, solitary. Fruiting calyx 4-partite, with scattered ferruginous hairs outside, nearly glabrous inside, with oval, flat, spreading or reflexed lobes, one-third inch long. Seeds oblong, two-thirds inch long; albumen not ruminated, embryo nearly as long as the albumen. Fruiting peduncles shortly hispid, one-fifth inch long, patent, unilateral, bearing 2 small bracts." (*Hiern, Monograph of the Ebenaceæ.*)

39325. MADHUCA INDICA Gmelin. Sapotaceæ. **Mahwa.**
(*Bassia latifolia* Roxb.)

"I hope you will get a few *Mahwa* plants, though I know the percentage of vitality is very small in these seeds." (*Bembower.*)

For previous introduction and description, see S. P. I. No. 39182.

39326 to 39329. OPUNTIA spp. Cactaceæ. **Prickly-pear.**

From Strathmore, North Quay, Brisbane, Queensland, Australia. Presented by Mr. Arthur Temple Clerk. Plants received at the Plant Introduction Field Station, Chico, Cal.

39326. OPUNTIA VULGARIS Miller.

39327. OPUNTIA TOMENTOSA Salm-Dyck.

39328. OPUNTIA BRASILIENSIS (Willd.) Haworth.

39329. OPUNTIA STRICTA Haworth.

39330. ATALANTIA MONOPHYLLA DC. Rutaceæ.

From Sibpur, near Calcutta, India. Presented by the Royal Botanic Garden. Received October 17, 1914.

See S. P. I. No. 38511 for previous introduction and description.

39331. GLIRICIDIA SEPIUM (Jacq.) Kunth. Fabaceæ.
(*Gliricidia maculata* H. B. K.)

From Manila, Philippine Islands. Presented by Mr. D. LeRoy Topping, Bureau of the Treasury, Manila. Received October 8, 1914.

"*Madre de cacao.* I used it for a house decoration and had stalks of it fully 10 feet long that were a mass of bloom, and everybody exclaimed, 'Quite like a bit of Japan.' The plant is inclined to sprawl, and if wanted purely for ornamental purposes it would be well to prune it." (*Topping.*)

39332 to 39334.

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunnicutt, director, Escola Agricola de Lavras. Received October 17, 1914. Quoted notes by Mr. Hunnicutt, except as otherwise indicated.

39332. PANICUM BARBINODE Trinius. Poaceæ. **Carib grass.**

Capim d'Angola.

See S. P. I. No. 37998 for previous introduction and description.

39333. TIBOUCHINA STENOCARPA (DC.) Cogn. Melastomaceæ.

"Seeds of a wild flowering shrub, commonly called *Quaresma* or *Lent*, as it blooms at Lent. It has a beautiful purple flower, and the blooming

39332 to 39334—Con. (Quoted notes by Mr. B. H. Hunnicutt.)

season covers a number of months. It grows well on the poorest, driest grounds we have and blooms during the dry season. I think it has been cultivated in some gardens in Brazil, although I never have seen it. Ornamental only."

39334. Stryphnodendron barbatimam Mart. Mimosaceæ. **Barbatimão.**

"*Barbatimão.* The bark of this is used for tanning purposes."

"Total dissolved solids, 31.6 per cent; solids soluble in cold water, 28.6 per cent; nontannins, 6.7 per cent; tannins, 20.1 per cent." (Letter from *Bureau of Chemistry, November 21, 1914.*)

39335. Dolichos hosei Craib. Fabaceæ. **Sarawak bean.**

From Kuala Lumpur, Malay States. Presented by the director, Department of Agriculture. Received October 16, 1914.

Seed from plants sent by Mr. Hose to Kuala Lumpur Experimental Plantation.

"I have found a small creeping bean of the Vigna family which is indigenous to Sarawak, but as yet I have been unable to ascertain its name; and I think it is just possible that it has never been reported from Sarawak. This bean appears to fulfil all that is required (a low-growing leguminous plant which can be dug into the soil and reproduce itself in time to check the growth of weeds and grows readily from cuttings), but seeds are very difficult to procure. The flower is yellow and the leaf a rich light green; the roots do not penetrate the ground more than 1 inch; the plant forms a thick level mass about 6 inches thick on the ground; it will grow on almost any soil, but for preference a light soil, and in six months after planting should prevent all wash if planted 3 feet apart. I have been planting this bean with rubber for three years and have now 200 acres planted with it, and it has proved itself in every way a success." (*Hose, in Agricultural Bulletin of the Federated Malay States, p. 276.*)

39336. Chorisia speciosa St. Hil. Bombacaceæ. **Samuu.**

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received October 15, 1914.

"Seeds of the *Samuu*, as called here. As to its beauty as an ornamental plant, I have every confidence in its making good. I wish to call your attention to one difference this variety has in comparison with the kind described in the department bulletins, which is that this tree does not need a humid atmosphere, and it will stand a very decided nip from frost, though to what degree I have not registered." (*Mead.*)

39337 to 39340. Manihot spp. Euphorbiaceæ. **Maniçoba.**

From Bahia, Brazil. Presented by Dr. V. A. Argollo Ferrão. Received October 5, 1914. Quoted notes by Dr. Argollo.

"The good name that *Jequie* rubber had was on account of being prepared in sheets and pure, because the *Manihot dichotoma* is tapped on the bark in *porangos* (tins) like *Hevea*, so such rubber is clean from impurities and is easily prepared in thin sheets of nice appearance. *Manihot heptaphylla* (Rio Sao Francisco zone) and *M. piauhyensis* (State of Piauhy) being tapped near the roots, if not tapped carefully, give rubber that has a large proportion of sand

39337 to 39340—Con. (Quoted notes by Dr. V. A. Argollo.)

and clay. As to quality, the *Jequie* is the worst, for it has resins and less elasticity. Growers who planted *M. dichotoma* succeeded badly because the growth of trees is extraordinarily variable. Seedlings from the same tree show an extraordinary variability of leaves and growth. *M. dichotoma* requires at least 6 years, as a rule, before tapping. The best variety for plantations is *M. piauhyensis*, for it gives the best rubber, and can be tapped at 3 years (even at 2 years under good conditions). With low prices of maniçoba rubber, maniçoba can only give profits if labor is very cheap, not exceeding 0.3 milreis (16 cents) per day. Maniçobas will not stand frost. (I have seen some severely injured in Sao Paulo by slight frosts in coffee districts.) Maniçoba requires a rainy season in summer. The *M. heptaphylla* and *M. dichotoma* are found in parts of the State of Bahia on the other side of the chains of mountains that divide the State in two climates. Between the mountains and the sea the rains are during winter, and on the other side, from the mountains to the Rio Sao Francisco, the rainfall is in summer. Maniçoba grows in the second zone if planted, but does not give much rubber nor good quality, as Villa Nova plantations show, although the trees have the best appearance. (Villa Nova is on the mountain that divides the climatic zones of the State. In the mountains you have rains in summer and *neblinas* (fog rain) in winter.) In the maniçoba districts there are heavy rains during summer for 4 to 6 months; such rains may last for 10 days, day and night. There are no rains during the dry season, and from time to time there happens a dry year and summer rains fail (about once in 10 years). In our State people who have maniçoba forests or plantations are investing in cotton, because the low price of rubber does not give enough profits to pay for the tapping of trees. Maniçoba will not stand stagnant water. I am going to gather for you seeds of the three varieties. I do not know whether any of them can be successfully cultivated in the States, but if you have the proper climatic conditions—rains in summer, no frosts, and soil from decomposed granite (red clayey sandy or sandy clayey)—I think you will prefer the small *M. piauhyensis*."

39337. MANIHOT GLAZIOVII Muell. Arg.

"*Maniçoba Ceara.* These small seeds with dark colorations are quite different from other varieties. This is the commonly known maniçoba for the first time tapped. It gives a good rubber and is tapped on the bark that is naturally exfoliated, which makes the tapping and collecting of clean rubber difficult."

39338. MANIHOT DICHOTOMA Ule.

"*Maniçoba Jequie.* Seeds long, of which the largest are quite typical."

39339. MANIHOT PIAUHYENSIS Ule.

"*Maniçoba Piauhy.*"

39340. MANIHOT HEPTAPHYLLA Ule.

"*Maniçoba Sao Francisco;* round seeds."

39341. (Undetermined.)

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, through Mr. Ad. Tonduz, Department of Agriculture, San Jose. Received October 21, 1914.

39342. VERSCHAFFELTIA SPLENDIDA Wendl. Phœnicaceæ. **Palm.**

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received October 19, 1914.

See S. P. I. No. 34083 for previous introduction.

39343 to 39351.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. at the request of Mr. C. V. Piper, of the Bureau of Plant Industry. Received at the seed warehouse on October 20, 1914. Quoted notes by Mr. J. M. Westgate.

39343. ONOBRYCHIS VULGARIS Hill. Fabaceæ. **Common sainfoin.**
(*Onobrychis viciaefolia* Scop.)

"This seed was obtained for trial on sandstone hills. It is a deep-rooted perennial forage crop which is to be tried in humid and subhumid sections."

39344. MEDICAGO LUPULINA L. Fabaceæ. **Yellow trefoil.**

"This seed was obtained for experiments with clover substitutes and as a pasture plant in the Southern States and northward."

39345. ORNITHOPUS SATIVUS Brot. Fabaceæ. **Serradella.**

"This seed was obtained for experiments with clover substitutes and as a pasture constituent in humid and subhumid climates."

39346. ULEX EUROPAEUS L. Fabaceæ. **Gorse or whin.**

"This seed was obtained for trial as a browsing shrub in limestone sections in humid and subhumid parts of the country."

39347 to 39349. LUPINUS spp. Fabaceæ. **Lupine.**

"This seed was obtained for use as a substitute for crimson clover in green-manuring experiments in the Northern States."

39347. LUPINUS ALBUS L. **White lupine.**
39348. LUPINUS ANGUSTIFOLIUS L. **Blue lupine.**
39349. LUPINUS LUTEUS L. **Yellow lupine.**

39350. CYTISUS SCOPARIUS (L.) Link. Fabaceæ. **Scotch broom.**

"This seed was obtained for trial as a browsing shrub in limestone sections in humid and subhumid parts of the country."

39351. SPERGULA ARVENSIS L. Silenaceæ. **Giant spurry.**

"This seed was obtained for trial as a green-manure crop and a forage crop."

39352. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

From Bogota, Colombia. Presented by Capt. H. R. Lemly, United States Army, retired. Received October 17, 1914.

"Seeds from a particularly fine specimen." (*Lemly.*)

"The principal fruit cultivated by the aboriginal inhabitants of western South America. Endemic in the Andes, and subtropical rather than tropical in its natural habitat. Fruit with an abundance of slightly acidulous sweet juicy pulp, with a flavor somewhat like that of a pineapple. Recommended for planting in southern California in the foothills near the coast." (*W. E. Safford.*)

39353. Coffea amara F. F. Bruijning. Rubiaceæ. Coffee.

From Tamatave, Madagascar. Presented by Mr. James G. Carter, American consul. Received October 12, 1914.

"*Mautsaka*, the so-called caffein-free coffee grown in the south of Madagascar." (*Carter.*)

"This coffee was collected in the Fort Dauphin district. It occurs frequently in the southeastern portion of Madagascar, grows from 5 to 5½ meters high, and resembles the ordinary coffee very much, although the leaves are smaller. The ripe fruit assumes a yellowish color; the seeds, which are harvested in February and March, contain no caffeine. The smell of the roasted coffee is pleasant, although the taste of the drink prepared therefrom is bitter and unpleasant. This species of coffee has not yet come into cultivation." (*F. F. Bruijning, in Verslagen van Landbouwkundige Onderzoekningen der Rijkslandbouwproefstations, no. 18, p. 115, 1915.*)

39354. Kokia drynarioides (Seem.) Lewton. Malvaceæ.
(*Gossypium drynarioides* Seem.)

From Mahana, Molokai, Hawaii. Presented by Mr. Joseph F. Rock, botanist, College of Hawaii, Honolulu, who secured them from Mr. Joseph P. Cooke. Received October 28, 1914.

"A few weeks ago I wrote Mr. Cooke, the owner of Molokai Ranch, on whose grounds the only tree of this species grows, asking if there were any seeds to be found on it, as you know this species was declared extinct, but it has revived again and one single branch produced some leaves and flowers as well as a few seeds. I am propagating a number of them here." (*Rock.*)

39355. Acacia horrida (L.) Willd. Mimosaceæ. Doorn boom.

From Johannesburg, Union of South Africa. Presented by Mr. J. Burtt Davy, Agricultural Supply Association. Received October 24, 1914.

See S. P. I. Nos. 1805 and 3330 for previous introductions and description.

"A glabrous, flat-topped tree, usually spreading more than its height. The most widely distributed of all South African trees, extending from Capetown through the Karroo to Damaraland, Orange River Colony, Transvaal, Natal, and Delagoa Bay. Its range is, however, curiously affected in places, it being absent, possibly through frost, in several large flat alluvial localities where single trees have grown to perfection. It ascends to about 4,000 feet altitude from the eastern coast and considerably further from the western, but is absent from the higher parts of the Drakenburg, and seldom mixes with Proteaceæ, thus indicating that soil as well as climate controls its distribution. Occasionally it forms a fine spreading tree 30 to 40 feet in height, and with a stem 2 feet in diameter; much more frequently it is a small umbrella-shaped tree of 10 to 15 feet in height with a clear bole only to 6 or 8 feet, and the constant regrowth dots or covers the veld with smaller sizes in localities where it is not kept down.

"Although usually evergreen, yet in dry, cold, carroid localities it is often leafless for a considerable part of the year, and in some localities for years in succession, and is then enormously spiny and colors the veld white instead of green. In most places its use is principally for fuel, for which purpose there is no better wood; but as this does not, except near the towns, use up all that grows, its increase in remote localities is a difficult matter to check. Fire burns the grass under mature thorn trees without doing them much damage, and as the seeds germinate most readily after being soaked in boiling water or half roasted, these grass fires aid rather than retard regrowth. Chopping off trees to the ground only induces an abundant coppice growth, but it is found that by chopping them off 2 feet above ground during summer the coppice growth is more easily controlled, and the stump often dies. Native localities usually become free of thorn trees eventually, partly through the unrestricted native demand for fuel, kraalwood, etc., and partly through the browsing of goats, which of all artificial methods is the surest means of keeping the tree down. A small brown scale insect, however (*Prosopophora prosopidis* var. *mimosae*), is found to kill the trees wholesale on the occasions of its visits in the Bedford district. During very dry winters it is not an uncommon practice to fell a few leafy thorn trees daily as a green bite for stock; during summer the shade of the spreading tree is sought after by cattle and sheep; young plants are always browsed, and where obtainable the roots are relished by goats; and for scenic effect there is perhaps no prettier tree, growing as it often does on a flat, rocky subsoil which will carry no better growth; on hot, rocky banks it is common, but it is never found in high, dense forest. Bark rough, thick, dark; formerly much used locally in the tanning of leather, and even now, at about half the price per ton as compared with black wattle, it pays to employ it for local use but not for export, as the percentage of tannin for the bulk is too low.

"The *doorn boom* is the host of an innumerable lot of pests, being often cleared of foliage by caterpillars of several large moths and by bagworms; its timber is often bored by *Apate dorsalis* and *Chrysobothris dorsata;* certain ants occasionally inhabit the thorns and induce a most thorny development; strange gall abortions or malformations of pods are caused by a fungus; another fungus (*Oecidium ornamentale*) makes artistic floriated curls of the young twigs; and Loranthus and mistletoe are frequent parasites.

"*Doorn boom* makes a strong, rough hedge if soaked seed is sown in line and kept watered till germination has taken place. It is also useful for sowing in beds of intermittent rivers with a view to arresting silt during future floods. It suffers severely during soft snowstorms, the horizontal branches and foliage breaking under a heavy weight of snow." (*Sim, Forest Flora of Cape Colony.*)

39356. COCOS NUCIFERA L. Phœnicaceæ. **Coconut.**

From Panama. Secured by Mr. H. Pittier, of the Bureau of Plant Industry. Received October 29, 1914.

"The small Burica nut, of which I have not been able to obtain a whole specimen, but I send along the three shelled ones which I have been keeping here till I could do better. This is said to be very rich in oil and to be scarce also, except around Punta Burica on the boundary between Costa Rica and Panama." (*Pittier.*)

39357 and 39358.

From San Jose, Costa Rica. Presented by the National Museum, San Jose. Received October 24, 1914.

39357. ACHRADELPHA MAMMOSA (L.) O. F. Cook. Sapotaceæ. (*Lucuma mammosa* Gaertn. f.) **Sapote.**

See S. P. I. Nos. 35673 and 37813 for previous introductions and description.

39357 and 39358—Continued.

39358. ANNONA PURPUREA Moç. and Sesse. Annonaceæ.

"This species has large aromatic fruit, velvety on the outside, with raised hooked tubercles; yellow aromatic pulp which is edible when ripe, but said to be unwholesome if eaten to excess. A medium-sized forest tree ranging from Mexico to Panama and Venezuela." (*W. E. Safford.*)

39359 and 39360.

From Bogota, Colombia. Presented by Mr. Roberto Ancizar, secretary to the Colombian Legation, through Mr. W. E. Safford, of the Bureau of Plant Industry. Received October 29, 1914.

39359. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

"One of the most delicious of the fruits of the higher regions of western South America; this variety is juicy and of a sweet acidulous flavor. Seeds relatively small in proportion to the pulp. Suitable for cultivation in the foothills of southern California." (*Safford.*)

39360. PASSIFLORA LIGULARIS Juss. Passifloraceæ. **Granadilla.**

"An egg-shaped fruit with parchmentlike shell filled with an abundance of sweet juice and many small seeds. Used in tropical America for making sherbets and ices alone or with the addition of lemon juice or spices. Of easy culture in all warm localities, growing in the form of a vine from trellises and arbors, and desirable not only for its fruit but for its beautiful flowers." (*W. E. Safford.*)

39361. ABUTILON THEOPHRASTI Medic. Malvaceæ. Ch'ingma.

(*Abutilon avicennae* Gaertn.)

Grown at Arlington Farm from seed received from Mr. R. A. Currie, Ichang, China, through Mr. A. H. Sugden, acting commissioner of customs, Hankow, China.

"Seeds of what purports to be *ta ma*. The capsules look to me small, and I am nearly sure that I have seen much larger ones, and I fear that these may be only the common hemp." (*Currie.*)

"The seeds from China are evidently those of the *ch'ingma* (*Abutilon theophrasti*), producing the so-called China jute or Tientsin fiber of commerce. *Ch'ingma* is cultivated from central China northward. Its fiber is stronger but somewhat harsher than that of India jute. It is used in this country to a limited extent, chiefly in the manufacture of jute carpets and rugs. The plant is adapted to the climate from Virginia to New York and westward to the Missouri Valley. It may be regarded as a promising fiber plant for introduction into this country, provided suitable methods can be devised for extracting the fiber and preparing it for market. We planted some of the seeds at Arlington Farm and secured 16 excellent plants about 3 meters high. The plants and also the leaves, flowers, and fruits were nearly twice the size of those of the ordinary velvet leaf planted at the same time, but otherwise no distinct difference has been detected between the two forms. We have harvested a quantity of seed from the plants this season, so as to have stock for sowing next year." (*L. H. Dewey.*)

39362. LYCOPERSICON ESCULENTUM Miller. Solanaceæ.

Wild tomato.

From Funchal, Madeira. Presented by Mr. Charles H. Gable, director, Junta Agricola. Received October 31, 1914.

"The little wild tomato *Lycopersicum vulgare cerasiforme* which is found in Madeira is considered by Lowe (*A Manual Flora of Madeira*) as being the original stock from which our cultivated varieties have been derived. The same author states that besides 'growing spontaneously everywhere below 2,000 feet about Funchal and other towns and villages in Madeira, it is completely naturalized on the central rocky crest of the North Deserta.' The North Desert is an almost barren, uninhabited island which lies about 30 miles from Madeira. To quote further: 'It has been found also in the Great Salvage by Sr. C. C. Noronha; and the interior of Sao Iago, one of the Cape Verdes, between the Ribeira dos Pices and the Boa Entrada of Sta. Catarina. I found it mixed with *Momordica charantia* L., overspreading in vast tangled beds or masses whole miles of mountain tracts at an elevation of 3,000 to 4,000 feet above the sea.' The selection which has taken place in the development of our cultivated varieties has not greatly changed the general appearance of the plant. The writer has not had the opportunity of making the careful botanical study necessary for the intelligent comparison of the characters presented by this wild tomato and our cultivated varieties, so there will be presented here only very brief observations of the conditions in which the plants grow. One of these plants was transplanted to a favorable part of the garden where the ground was rich and had plenty of moisture. It made a tremendous growth, and at the end of three months the plant was 5 feet in diameter and 3½ feet high. Unfortunately, the plant was destroyed, so that it was impossible to complete the record. Another plant was found where it could not have had a drop of water for at least three months. It probably had started to grow during the last few rains of the spring, but had completed its growth during the heat and drought of summer. The particular spot where it grew was the hottest of the hot parts of the island. When it was found, the vine was apparently entirely dead and lying flat on the ground; the leaves had dried up and dropped off; but the fruits, every one of which was ripe, were clinging to the vine. It also seemed very strange to find that the fruits were all plump and firm—over 300 of them on this one vine. The fruits are so very acid that they can be used for little else besides soups, and the natives do not use them a great deal for even that. Their keeping quality, however, might prove a desirable characteristic in crossing with some of the highly developed varieties with the object of obtaining a good shipping tomato of pleasing flavor." (*Gable.*)

39363. HORDEUM VULGARE COELESTE L. Poaceæ. **Barley.**

From Jerusalem, Palestine. Presented by Mr. Ernest F. Beaumont, American Colony. Received October 28, 1914.

"*Prophet's* barley. This is grown around Mecca and is esteemed as sacred by the Mohammedans. No animal is made use of in its planting, harvesting, or thrashing, as such use would be considered as defiling it. You will notice that the kernels shell out from the husk quite clean, like wheat." (*Beaumont.*)

39364. ORYZA SATIVA L. Poaceæ. **Rice.**

From Salisbury, Southern Rhodesia. Presented by Mr. H. G. Mundy, Government agriculturist and botanist, Department of Agriculture, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received November 9, 1914.

"Mashonaland rice. Native crop grown in Southern Rhodesia." (*Mundy.*)

39365 to 39368. HORDEUM spp. Poaceæ. **Barley.**

From Pusa, India. Presented by Mr. Bernard Coventry, agricultural adviser to the Government of India, Imperial Department of Agriculture. Received November 4, 1914.

39365 and 39366. HORDEUM spp. **Barley.**

Huskless 6-rowed varieties.

39365. HORDEUM VULGARE COELESTE L.

A new form with very short awns.

39366. HORDEUM VULGARE HIMALAYENSE Rittig.

Smoke-colored grain. Received as *H. gymnohexastichon,* but identified by Dr. H. V. Harlan as above.

39367 and 39368. HORDEUM VULGARE L. **Barley.**

39367. Common 6-rowed barley.

39368. Common 6-rowed barley, husked.

39369 to 39375. PERSEA AMERICANA Miller. Lauraceæ.
(*Persea gratissima* Gaertn. f.) **Avocado.**

From Altadena, Cal. Collected by Mr. Wilson Popenoe, of the Bureau of Plant Industry. Bud sticks received November 9, 1914. Quoted notes by Mr. Popenoe.

39369. "(No. 6. November 2, 1914.) *Taft* avocado. This variety is one of the most promising of the thick-skinned, spring-ripening avocados which has yet fruited in California. It originated with Mr. C. P. Taft, of Orange, whose name it bears. Its parentage is not definitely known, but it belongs, without doubt, to the type from Atlixco, Puebla, Mexico, which has been so widely disseminated in southern California by John Murietta, of Los Angeles. The *Taft* is broadly pyriform, averaging about 1 pound in weight, with a bright green, undulating surface and thick, tough skin, which separates readily from the flesh. The seed is rather small, comparatively speaking, and fits tightly in its cavity. The flesh is smooth, fine grained, without a trace of fiber, of rich, nutty flavor, and excellent quality. Its keeping qualities are remarkable, and it ships well. The tree is a very vigorous grower and buds easily. The foliage is reddish bronze when young, deep green later. In California the fruit commences to ripen in May and will hang on the tree in perfect condition through June and July. Owing to the difference in climatic conditions, the season may be somewhat earlier in Florida. While the variety has not been as prolific in fruiting as some of the others, this may have been due partly to the fact that the parent tree, which is the only one yet in full bearing, has been cut back severely for propagation. Mr. Taft has taken over 10,000 buds from it in a single season. For trial in southern Florida."

39370. "(No. 7. November 2, 1914.) *Dickinson* avocado. This is an avocado of the true Guatemalan type, the seed from which the parent tree was grown having been brought from Guatemala City to Los Angeles about 16 years ago. In size it is slightly smaller than the best varieties of the type, averaging not over 10 ounces in weight.

39369 to 39375—Con. (Quoted notes by Mr. Wilson Popenoe.)

It is, however, unusually prolific. The form varies from oval to broadly obovate. The surface is rough, almost tuberculate, dark green until fully ripe, when it changes to deep purple. The skin is thick, woody, granular in texture. The flesh is free from fiber, smooth, and of good flavor. The seed is slightly under average size, compared to the size of the fruit, and is perfectly tight in the cavity. The tree appears to be a vigorous grower and about as hardy as most of the Guatemalan varieties grown here. Although it has been grown under unfavorable conditions and is somewhat small in size, the parent tree has produced more than 800 fruits in a single season. It ripens from April to June. To be tried in southern Florida."

39371. "(No. 8. November 2, 1914.) *Meserve* avocado. A variety originated at Long Beach, Cal., on the ranch formerly owned by Mr. A. R. Meserve. The seed is believed to have come from Hawaii; in characteristics of fruit and foliage the variety is almost identical with some of the avocados of Guatemalan and southern Mexican origin which are grown in California, but in view of the fact that the Guatemalan avocados were long ago introduced into Hawaii this is not surprising. As a commercial variety the *Meserve* has the advantage that it is nearly round. Quality is its other strong point, the flavor being unusually rich and pleasant. The skin is deep green in color, thick and woody, as in all of this type. Good specimens will average nearly a pound in weight. The seed is medium sized, tight in the cavity. In growth the tree is vigorous, and while the parent was badly injured in the cold weather of January, 1913, this may not have been due to its tenderness so much as to its exposure and condition at the time. It is a good bearer, and on the whole seems to be a very promising variety. The season is April and May in southern California. For trial in southern Florida."

39372. "(No. 9. November 2, 1914.) *Solano* avocado. This is one of the largest varieties yet fruited in California. It originated on the property of Mr. Alfred Solano at Hollywood, Cal., and is of the southern Mexican or Guatemalan type. Probably its origin may be sought in one of the shipments of avocados brought to Los Angeles from Atlixco, Puebla, Mexico, by John Murietta. In shape the *Solano* is oval to oblong pyriform; the size is large, averaging from 16 to 28 ounces in weight. The skin is thick, tough, externally green in color, and almost smooth. The flesh is creamy yellow in color, smooth, and free from fiber. The parent tree has been grown in the center of a lawn where it received a good deal of water, consequently the fruits have not been quite as rich in flavor as they would probably have been under normal conditions. The seed is small in comparison with the size of the fruit, and it is tight in the cavity. For a variety of this size, the *Solano* is very productive. Its season is May and June. In growth it is vigorous and strong, but it does not produce good bud wood and is more difficult to propagate successfully than some others. For trial in southern Florida."

39373. "(No. 10. November 2, 1914.) *Blakeman* avocado. Originated on the Dickey place at Hollywood, Cal., from a seed imported from Atlixco, Puebla, Mexico, by John Murietta, of Los Angeles. It is an excellent variety of the thick-skinned Guatemalan type. In form it is broadly obovate, but broader at the basal end than is common with

39369 to 39375—Con. (Quoted notes by Mr. Wilson Popenoe.)

fruits of this shape, and without any suspicion of a 'neck.' It will average slightly less than a pound in weight. The surface is deep green in color, the skin thick and woody. The flesh is smooth, fine in texture, buttery, and of very rich, pleasant flavor, considered one of the best in quality of the Guatemalan varieties fruiting in California. The seed is about medium in size and tight in the cavity. The parent tree, at 8 years of age, is bearing between 200 and 300 fruits, which can be considered a good record in view of the fact that seedlings of this type do not usually come into bearing until the sixth or seventh year. The season of ripening is May and June. In growth it is strong and vigorous. For trial in southern Florida."

39374. "(No. 11. November 2, 1914.) *Ganter* avocado. One of the best known and largest local varieties of the thin-skinned, fall ripening Mexican type of avocado. It originated at Whittier, Cal. The form is oblong ovate, the weight being sometimes as much as 10 or 12 ounces, though the average would probably be somewhat less. The skin is scarcely thicker than that of an apple, and it adheres closely to the flesh. Externally the color is light green, with minute russet spots. The flesh is creamy yellow in color, of very rich and nutty flavor. The seed is rather small, but sometimes loose in its cavity. The fruit shows a tendency to decay around the apical end and does not always ripen evenly. This may possibly be avoided by picking at a certain stage before the decay has commenced to show. The tree is a very vigorous grower and much hardier than the average variety of the Guatemalan type. It is extremely prolific and comes into bearing at a very early age, trees two years from the bud sometimes carrying several fruits. It may be of value for cultivation in sections of Florida which are too cold for the *Trapp* and other varieties of that class."

39375. "(No. 12. November 2, 1914.) *Harman* avocado. This, like the *Ganter*, is a thin-skinned, fall-ripening avocado, its season being late September to early November. It is one of the most vigorous and hardy varieties yet grown in California and when planted in orchard form makes a handsome, shapely tree. The fruit is obliquely obovate in shape and weighs from 7 to 10 ounces, or even more in exceptional cases. The surface is smooth, glossy, light green in color, overspread with purplish maroon and with numerous light yellow dots. The skin is thin and adheres closely to the flesh. In texture the flesh is very buttery and smooth, in color yellow when fully ripe, and in flavor very rich and nutty. The seed is not above average size, but is loose in its cavity, which being rather large makes the proportion of flesh smaller than in some other varieties. When allowed to hang on the tree until late in the season the fruits frequently crack at the apical end, the fissure sometimes extending clear through into the seed cavity. Because of its hardiness it will be desirable to give this variety a trial in those sections of Florida which are too cold for the *Trapp* and other avocados of that class."

39376 to 39381.

From Salisbury, Southern Rhodesia. Presented by Mr. H. G. Mundy, Government agriculturist and botanist, Department of Agriculture, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received November 9, 1914. Quoted notes by Mr. Mundy.

38376 to 39381—Continued. (Quoted notes by Mr. H. G. Mundy.)

39376. ELEUSINE CORACANA (L.) Gaertner. Poaceæ. **African millet.**

"*Rapoko.* Seeds of the native crop grown in Southern Rhodesia."

39377. HOLCUS SORGHUM VERTICILLIFLORUS (Steud.) Hitchcock. Poaceæ. **Sorghum.**

39378 to 39380. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"Seeds of the native crop grown in Southern Rhodesia."

39378. "*Durra.* Probably American in origin; known locally as *Sapling.*"

39379. "*Durra.* White."

39380. "*Sorghum.* Obtained by us from Australia, but a native of the west coast of Africa and known as *Mazagua.*"

39381. PENNISETUM GLAUCUM (L.) R. Brown. Poaceæ. **Pearl millet.**
(*Pennisetum typhoideum* Rich.)

"*Inyouti,* native crop grown in Southern Rhodesia."

39382 and 39383. PASSIFLORA spp. Passifloraceæ.

From Bogota, Colombia. Presented by Mr. Henry Coronado, Republic of Colombia Bureau of Information, Washington, D. C., through Mr. W. E. Safford, of the Bureau of Plant Industry. Received November 6, 1914. Quoted notes by Mr. Safford.

39382. PASSIFLORA LIGULARIS Juss. **Granadilla.**

"Fruit ovoid, very juicy, with fine flavor. Used in Colombia for making sherbets. Suitable for covering trellises and arbors."

39383. PASSIFLORA MALIFORMIS L. **Curubá.**

"Fruit depressed spheroid, hard shelled. Suitable for packing. Pulp of fine flavor; used for making sherbets. The variegated, beautiful red and white flowers with blue corona filaments are sweet scented. The involucre, composed of 3 ovate-acute bracts joined at the base, is larger than the flower itself. The shell of the fruit is sometimes so hard that it must be broken with a hammer. The inclosed pulp has a pleasant grapelike flavor."

39384 to 39391.

From San Juan Bautista, Tabasco, Mexico. Presented by Mr. Gabriel Itié, director, Agricultural Experiment Station. Received November 7, 1914. Quoted notes by Mr. Itié.

39384. ORYZA SATIVA L. Poaceæ. **Rice.**

"Creole rice from dry lands. Harvested in the Mango Pass, near San Juan Bautista, Tabasco, Mexico."

39385. RIVERA CORYMBOSA (L.) Hallier. Convolvulaceæ.

"*Eschaventun.* Convolvulaceous plant, abundant in the Department of Monte Cristo, Tabasco, and in the States of Campeche and Yucatan. The fragrant flower produces honey."

39386 and 39387. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

39386. "White cowpea. Agricultural experiment station of Tabasco. This variety appeared in a lot of *Blackeye* cowpeas. It is not known if this is a sport or an accidental sowing. The flower is

39384 to 39391—Continued. (Quoted notes by Mr. Gabriel Itié.)

white and identical with the flower of the *Blackeye*, but the seed is entirely white, having at times a black border around the hilum. Edible."

39387. "Cowpea *panadero* (baker's cowpea), Gonzalez Cosio Colony, Department of Huimanguillo, Tabasco, Mexico. This variety, known under the name of 'baker's bean' (*panadero* bean) was probably introduced from Porto Rico by the colonists. The seed is edible, especially when young."

39388. ANNONA GLABRA L. Annonaceæ. **Anona.**

"*Corcho.* Grows in abundance on the margins of the lakes around San Juan Bautista, Tabasco, Mexico. The pulp of the fruit is of an orange color and very fragrant. Eaten at times by the inhabitants. Sometimes used as a stock upon which to graft other anonas."

39389. CEIBA ACUMINATA (S. Wats.) Rose. Bombacaceæ. **Pochote.**

"*Pochote.* Comes from the State of Oaxaca, Mexico. According to J. Guardiola (*Boletin de la Direcion de Agricultura, Parte I, January, 1912, p. 30*), this variety is recommended for its earliness and the small height it attains. It can be reproduced by seeds or cuttings, and in the following year, when it has reached a height of 70 to 80 cms., it commences to flower and fruit. This depends on the climate and the nature of the soil in which the plant is grown. It can be grown in rocky soil if necessary. Its growth is rapid. Its cultivation will be very productive after three years. Reproduction by cuttings is much used in the country in the forming of live hedges of very fine appearance in the flowering season. In the State of Oaxaca its production exceeds 160,000 kilos annually. It is produced in the districts of San Carlos, Yautepec, Tehuantepec, Juchitan, Tuxtepec, Juchila, and Pochutla, but it is not cultivated. It is cultivated on a small scale in the State of Michoacan, and in Ario de Rosales a price of 50 cents per kilo of clean fiber has been realized."

39390 and 39391. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

"Harvested in the experimental station of Tabasco from seed from Oaxaca. Very prolific and piquant."

39390. Red pepper. **39391.** Yellow-podded red pepper.

39392. THRINAX MICROCARPA Sargent. Phœnicaceæ. **Palm.**

From Pumpkin Key, Florida. Collected by Mr. David A. Bisset, of the Bureau of Plant Industry.

"Seeds of a palm growing in a dense hammock growth on Pumpkin Key, about 40 miles below Miami. It is a very attractive palm and might prove of value as an ornamental. The largest plant seen was about 15 feet high and had a trunk 4 inches in diameter. All of the leaves are silvery on the under side and they keep this glaucous character until they turn brown. It is probably a native of the keys, but it is somewhat rare, as on Pumpkin Key only 13 or 14 specimens were found." (*D. A. Bisset.*)

39393 and 39394. AMYGDALUS PERSICA L. Amygdalaceæ.
(*Prunus persica* Stokes.) **Peach.**

From La Paz, Bolivia. Presented by Mr. George M. McBride, director, American Institute. Received November 10, 1914.

39395 to 39411. Hordeum spp. Poaceæ. **Barley.**

From Sydney, New South Wales. Presented by Mr. G. Valder, undersecretary and director, Department of Agriculture. Received November 12, 1914. Quoted notes by Mr. Valder.

39395 and 39396.

"From the experiment farm, Cowra. Harvested December, 1913."

39395. Hordeum vulgare L.

"*Shorthead* barley, dark grain."

39396. Hordeum vulgare coerulescens Seringe.

"*Roseworthy Oregon* barley, grain dark colored."

39397 to 39401. Hordeum vulgare L.

39397. "Barley No. 18. Grain slightly dark."

39398. "Barley No. 22. Remarkably early."

39399. "Barley No. 24. Early variety, short straw, grain pale colored."

39400. "Barley No. 36."

39401. "Barley No. 49. A good barley, not well grown."

39402 to 39405.

"From the experiment farm, Bathurst."

39402. Hordeum distichon erectum Schubl.

The Maltster.

39403. Hordeum vulgare L.

Cape.

39404. Hordeum vulgare violaceum Koern.

Black Hull-less.

39405. Hordeum vulgare coerulescens Seringe.

Sea of Azof.

39406 to 39411.

"From the Wagga Experiment Farm, Bomen."

39406. Hordeum distichon L.

Kinver.

39407. Hordeum distichon nutans Schubl.

Gisborne.

39408. Hordeum distichon erectum Schubl.

Archer.

39409 and 39410. Hordeum vulgare L.

39409. *Skinless.* 39410. *Canadian Battledore No. 1.*

39411. Hordeum distichon erectum Schubl.

Canadian Malting No. 2.

39412. Feroniella lucida (Scheff.) Swingle. Rutaceæ.

From Buitenzorg, Java. Presented by the Department of Agriculture. Received November 14, 1914.

See S. P. I. Nos. 28123, 34472, and 38860 for previous introductions.

39413. Castanea crenata Sieb. and Zucc. Fagaceæ. **Chestnut.**

From Tokyo, Japan. Presented by Miss B. Catherine Pifer. Received November 13, 1914.

Imperial chestnut.

39414. Franklinia alatamaha Bartram. Theaceæ.
(*Gordonia pubescens* L'Herit.)

From Philadelphia, Pa. Presented by Mr. Ogleby Paul, Fairmount Park. Received October 7, 1914.

See S. P. I. Nos. 26930 and 26931 for previous introductions and description.

"This is probably one of the least known of our small trees, and yet it stands among the most beautiful of our native plants. In habit of growth and in the leaf the Gordonia, or, as it is sometimes called, Franklinia, is not unlike a magnolia, although in the flower it more nearly resembles a camellia. Furthermore, it is especially valuable on account of its late flowering period, plants being in bloom at the present time in the Arnold Arboretum. The Gordonia is of a rather upright habit, forming a well-shaped head. It is a member of the tea family, Theaceæ. Its finely crenate, lance-obovate leaves are of the color of the leaves of *Magnolia acuminata*, but whitish downy beneath. The fragrant flowers are borne on the ends of the branches on short, stout peduncles. They are pure satiny white, about 2½ inches in diameter and bowl shaped at their best, later becoming flatter as the flower ages. The stamens are bright golden yellow and are placed directly on the petals, where they form a tuft perhaps a half inch or more in diameter, making a beautiful combination of color against the pure white of the petals. The pod is globular, light green, and covered with a whitish down. This plant was first discovered in southern Georgia, whence it was introduced into Europe in 1744, and named by Dr. Garden in honor of his 'old master, Dr. James Gordon,' and by Ellis it was dedicated to a London nurseryman of the same name. This nurseryman appears to have been a contemporary of Philip Miller. It was called Franklinia in honor of Dr. Franklin. During the past hundred years it has not been found in a wild state, although much searched for. This fact makes it not only a rare and valuable tree, but one which should be more propagated and kept, lest it be lost entirely to future generations. In the vicinity of Philadelphia there are several trees growing in the open without protection, but north of that point its hardiness can not be wholly depended upon. In protected situations, however, I see no reason why we of the North can not enjoy its exquisite beauty, provided, of course, we give it protection. In the Arnold Arboretum the plants receive part shelter from the other plants, which are planted about them, and came through the winter of 1913–14 when so many other beautiful things perished. The Gordonia may be propagated from layers or from seeds, and will thrive in a peaty soil or in leaf mold and sand." (*Hubert M. Canning, in Horticulture, Oct. 24, 1914.*)

39415. Spathodea campanulata Beauv. Bignoniaceæ.

From Peradeniya, Ceylon. Presented by Mr. H. F. Macmillan, superintendent of the botanic gardens. Received November 14, 1914.

"This seems to be the only species of Spathodea generally known in the East. The tree flowers profusely at Peradeniya almost throughout the year, except in the dry season, but seldom or never bears fruit here. It produced, however, fruit and seeds in our former garden at Anuradhapura, now abandoned, where the climate is much drier than at Peradeniya, the rainfall being limited to three months of the year." (*Macmillan.*)

39416 and 39417. SOLANUM spp. Solanaceæ.

From Bremen, Germany. Presented by Prof. Dr. G. Bitter, Bremen Botanic Garden. Received November 13, 1914. Quoted notes by Dr. Bitter.

"Cultivated in the botanic garden, Bremen, 1914, from seeds."

39416. SOLANUM CAESIUM Griseb.

"Seeds received from Oran, northern Argentine."

39417. SOLANUM ACAULE Bitter.

"Seeds collected in 1913 in Oruro, Bolivia."

39418 to 39422.

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Cuban Agricultural Station. Received November 14, 1914. Quoted notes by Mr. Roig.

39418. EUGENIA TUBERCULATA (H. B. K.) DC. Myrtaceæ.

"*Grajo.* A myrtaceus shrub producing hard wood."

39419. HARPULLIA CUPANIOIDES Roxburgh. Sapindaceæ.

"A fine tree cultivated at the station. Of rapid growth and probably producing good timber."

Distribution.—A tree bearing erect panicles of yellow flowers, followed by pendent clusters of orange-colored fruits, found in India and Ceylon and eastward to Sumatra, Java, and Borneo.

39420. PITHECOLOBIUM TORTUM Martius. Mimosaceæ.

"*Humo.* A tree producing valuable golden-colored timber. Much used for posts and fences."

39421. SOPHORA TOMENTOSA L. Fabaceæ.

"*Tambalisa.* A very ornamental shrub with yellow flowers. It forms wide masses and is suitable for planting around the house and gardens."

39422. TRICHILIA HAVANNENSIS Jacq. Meliaceæ.

"*Siguaraya.* A low tree much used for hedges and popularly employed, as a drug plant, against rheumatism and other diseases."

39423 to 39442.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received November 17, 1914. Quoted notes by Mr. Meyer.

39423. HOLCUS SORGHUM L. Poaceæ. Kaoliang.
(*Sorghum vulgare* Pers.)

"(No. 2118a. Linhsien, Honan, China. July 5, 1914.) A variety of *kaoliang* grown as a fodder for domestic animals. Is generally sown out very thickly either in small patches or as strips along fields. In appearance is much like Johnson grass. Chinese name *Chiao ts'ao kaoliang*, meaning 'emerald-grass kaoliang.'"

39424. CANNABIS SATIVA L. Moraceæ. Hemp.

"(No. 2119a. Luanfu, Shansi, China. July 13, 1914.) A variety of hemp, said to produce long, strong, and fine fiber. Grown on terraces on somewhat moist soil at altitudes between 3,000 and 4,000 feet."

39423 to 39442—Continued. (Quoted notes by Mr. F. N. Meyer.)

39425. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor bean.**

"(No. 2120a. Southwest Shansi, China, August 4 to 14, 1914.) Var. *inermis*. A variety of castor bean having spineless burs. Occurs sporadically in fields among the ordinary sort. Of value to students of mutation and variation in plants, and possibly of commercial value also as producing less waste material than the common varieties."

39426. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

"(No. 2121a. Mountains between Hotien, near Linhsien, Honan, and Luanfu, Shansi, China. July 7 to 12, 1914.) A wild alfalfa, found everywhere between grasses, bowlders, rocks, and pebbles, on banks, cliffs, etc.; of low spreading growth, foliage small, flowers of blue color, large individually, but racemes small. Branches not erect except when having some support. Thrives best, apparently, at altitudes between 2,000 to 4,000 feet above sea level. Of value possibly as a pasture plant in the intermountain sections of the United States. This alfalfa may be one of the original forms in which this important forage plant occurs on the globe, and the erect-growing varieties now so extensively cultivated might have been derived from one of these prostrate forms."

39427. INCARVILLEA SINENSIS Lamarck. Bignoniaceæ.

"(No. 2122a. Near Wuwang on the Hwang River, Shansi, China. August 11, 1914.) Var. *floreflava*. A variety of this biennial, having large, pale-yellow flowers, instead of rosy ones. Of value as an ornamental for the hardy border. Of special interest to botanic gardens."

39428. AMYGDALUS sp. Amygdalaceæ. **Peach.**

"(No. 2123a. Sianfu, Shensi, China. August 21 to 26, 1914.) Stones of the real wild peach, growing in the mountains one day's journey south of Sianfu. The fruits are small, hard, and sourish, but there is considerable variation in them as regards size and taste. They are apparently all freestones, and while some have red flesh near the stone, others are white throughout. The Chinese eat these fruits out of hand, but they do not appeal to the white races, although they might be utilized when preserved, as they possess the real peach flavor. Local name *Ying t'ao*, meaning 'cherry peach.'"

39429 and 39430. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

39429. "(No. 2124a. Peking, China, June 25, 1914.) A large apricot of soft yellow color and of mango shape, which is a very unusual form among apricots. Said to come from the vicinity of Paotingfu, Chihli Province."

39430. "(No. 2125a. Peking, China. June 27, 1914.) An apricot with fruits as large as small apples; of whitish yellow color with some blush on one side. Of fresh and sweet taste. Said to come from the vicinity of Paotingfu."

39431. XANTHOCERAS SORBIFOLIA Bunge. Sapindaceæ.

"(No. 2126a. Chaoyu, Shansi, China. July 22, 1914.) A shrub, occasionally growing into a small-sized tree, found in loess cliffs. The shiny pinnate foliage reminds one of an ash, but the drooping racemes of white flowers, with yellow stamens, produced in great masses in early summer, give the shrub quite a distinct appearance. The Chinese eat the kernels of the fruit and call the plant *Mu kua hua*, meaning

39423 to 39442—Continued. (Quoted notes by Mr. F. N. Meyer.)

'quince flower,' on account of the large fruits resembling those of the Japanese quince. This shrub, closely related to the horse chestnut, is decidedly ornamental and of special value as a garden shrub for those semiarid sections of the United States where the winters are not too severe."

For illustrations of this shrub as seen growing in China and of its fruit and foliage, see Plates I and II.

39432. Prinsepia uniflora Batalin. Amygdalaceæ.

"(No. 2127. Near Fuchengchen, Shansi, China. July 21, 1914.) A spiny shrub, having many long branches, growing from 3 to 5 feet in height, and of spreading habits. Foliage lanceolate and serrated, resembling that of a Rhamnus. Flowering early in May with pale rosy flowers, produced in great masses. The fruits, which are of dark-red color and resemble small cherries in general looks, ripen in July. They are quite juicy, but sour; however, they vary a good deal as regards size, degree of juiciness, and acidity, some being edible out of hand, while others are very acrid. By selection, strains could be obtained, no doubt, which could be cultivated as garden fruits. The shrubs love a well-drained situation and thrive quite well even on rocky débris. Of value as an ornamental spring-flowering bush and as a prospective fruiting shrub, especially for the drier parts of the United States where the winters are not too severe. Local Chinese name *Tz'ŭ yü*, meaning 'spiny elm.'"

For illustrations of the Chinese Prinsepia in flower and in fruit, see Plates III and IV.

39433. Rhamnus sp. Rhamnaceæ.

"(No. 2128a. Kulo, Shansi, China. July 24, 1914.) A tall, shrubby Rhamnus, often growing into a small tree. Of spreading habits, leaves slender, lanceolate and serrate, looking not unlike slender *davidiana* peach leaves. This shrub is apparently rare; it is found here and there in loess cliffs and on old grave mounds; it seems to be able to withstand a good deal of alkali. Of value as a park shrub and possibly as a hedge plant, especially for the drier sections of the United States. The purplish black berries possess a sickening sweet taste and are apparently not eaten by the Chinese."

39434. Ampelopsis aconitifolia dissecta (Carr.) Koehne. Vitaceæ.

"(No. 2129a. Pingyangfu, Shansi, China. August 2, 1914.) A variety of Ampelopsis, with finely cut foliage, of light-green hue, and bearing dull-yellow berries. Very ornamental when covering a wall or trained over some latticework. Of value as a porch, arbor, and pergola vine, especially in semiarid climes."

39435. Vicia sp. Fabaceæ. **Vetch.**

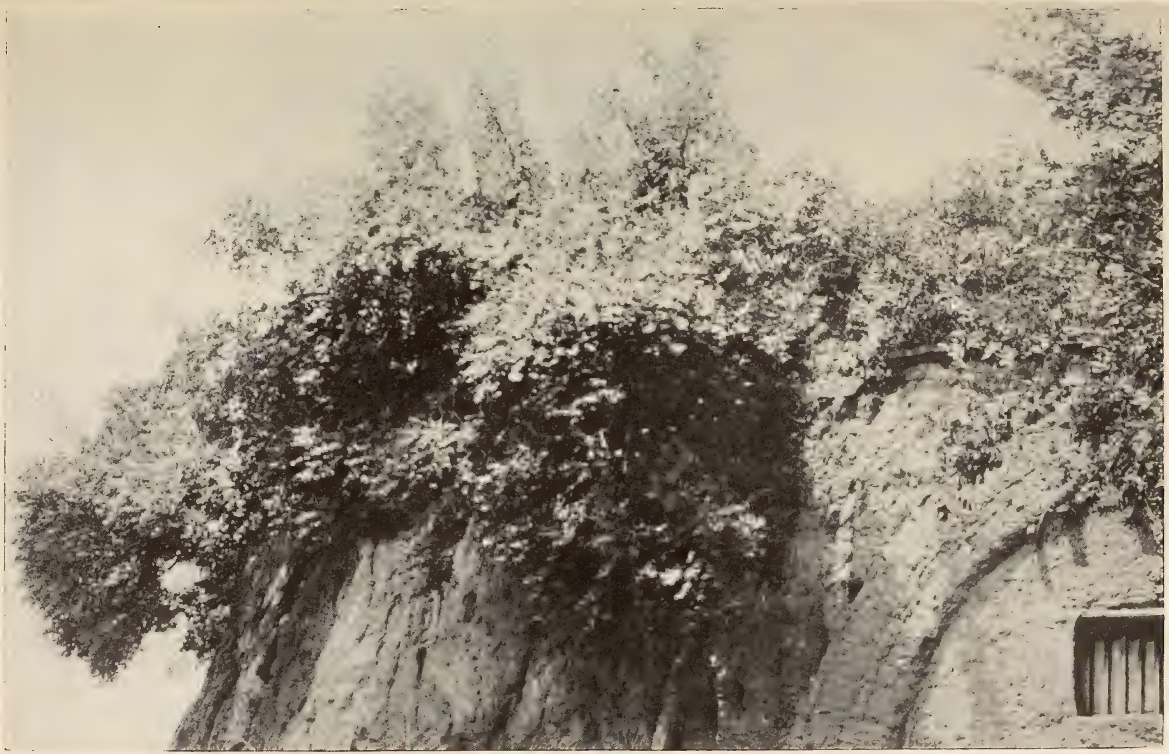
"(No. 2130a. Mountains near Hotien, near Linhsien, Honan, China. July 7, 1914.) A vetch of vigorous growth, foliage glabrous. Found in rocky crevices and apparently able to withstand drought quite well. Of value possibly for forage purposes."

39436 to 39439. Prunus spp. Amygdalaceæ.

39436. Prunus humilis Bunge. **Plum.**

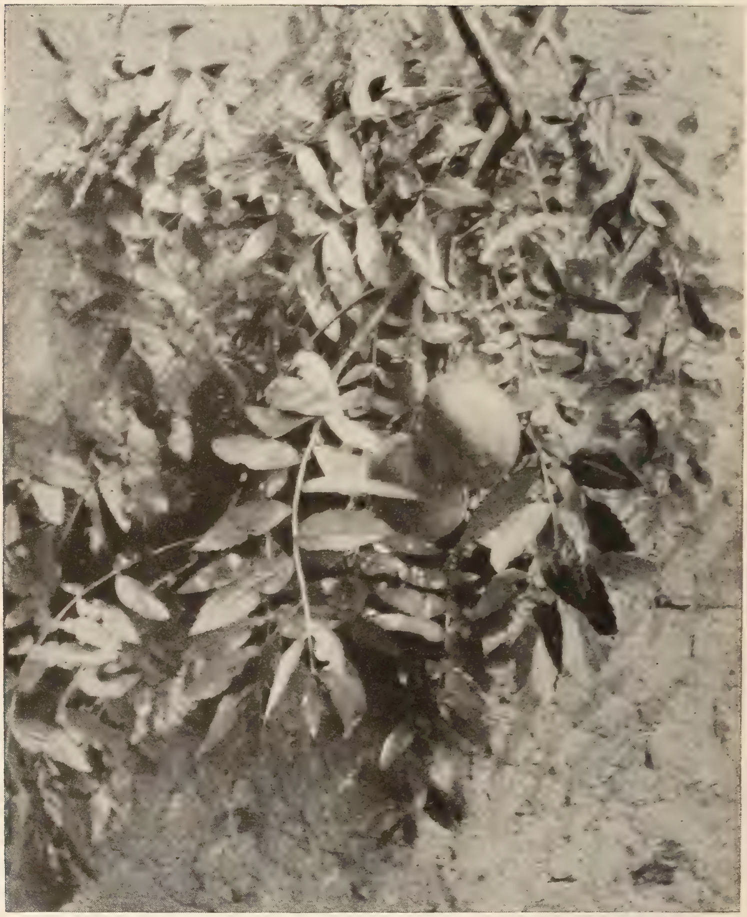
"(No. 2131a. Yuncheng, Shansi, China. August 11, 1914.) A variety of wild Chinese dwarf plum, with fruits as large as good-

PLATE I.



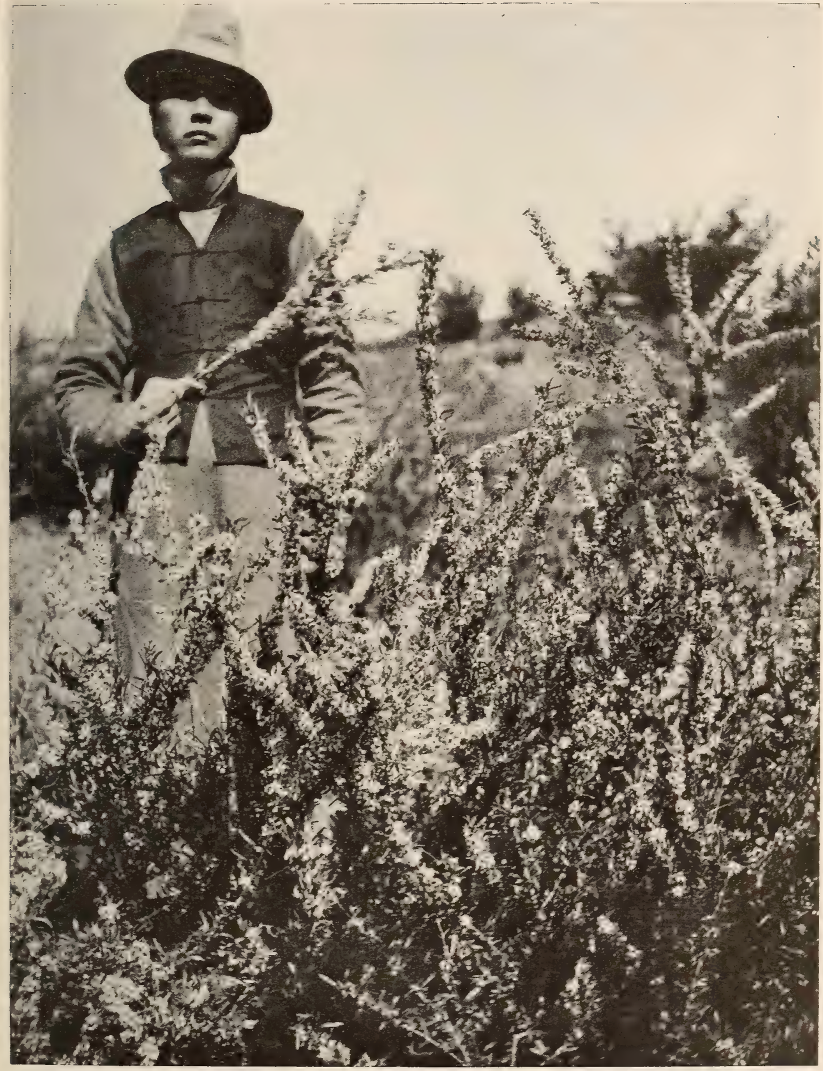
XANTHOCERAS SORBIFOLIA. (SEE S. P. I. No. 39431.)

Clump of this shrub, as seen in loess cliffs; quite attractive with their shiny green, pinnate foliage. As may be surmised, this shrub is able to withstand a good deal of drought, and it is recommended as an ornamental shrub or small tree for gardens in semiarid regions. (Photographed by Frank N. Meyer, Chaoyu, Shansi, China, July 23, 1914; P12176FS.)



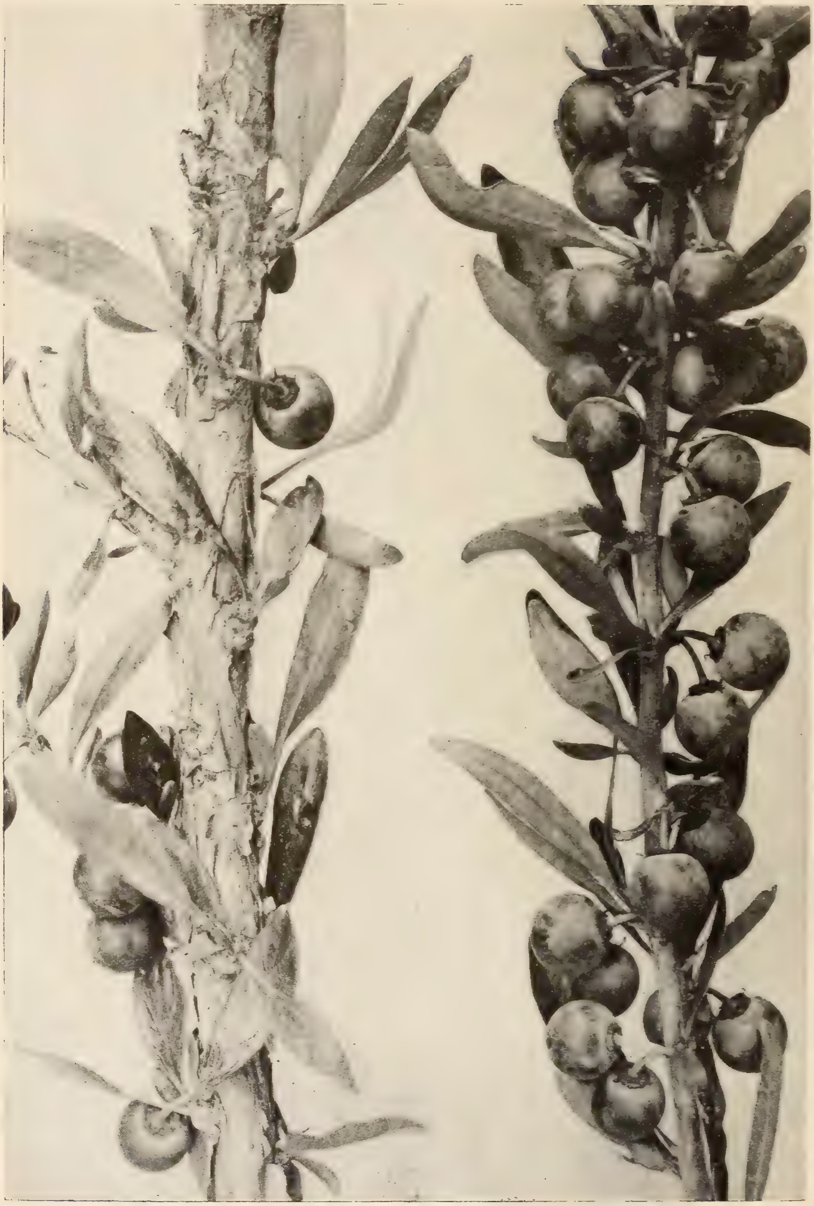
FRUITING BRANCH OF XANTHOCERAS SORBIFOLIA. (SEE S. P. I. NO. 39431.)

This North Chinese plant belongs to the horse-chestnut family. It is found wild as a shrub in dry loess banks and cliffs in Shansi, Honan, Shensi, and Kansu, in which provinces the country people eat the kernels, calling the plant *Mu kua hua* (quince flower), presumably on account of the fruits somewhat resembling Japanese quinces in appearance. In temple courts around Peking one frequently finds this plant cultivated, and in such places it grows into a small tree, often with a dense head of foliage. Though seldom seen in American gardens, it deserves to be more widely planted, especially in dry, sunny situations, where its masses of white flowers with yellow and red blotches in the center appearing in May make the plant of great decorative value. (Photographed by Frank N. Meyer, at Chaoyu, Shansi, China, July 23, 1914; P12264FS.)



THE CHINESE PRINSEPIA (PRINSEPIA UNIFLORA) IN FLOWER. (SEE S. P. I. NO. 39432.)

As a flowering shrub for dry regions the Prinsepia is well worthy of introduction. Its small white flowers are crowded densely around the branches. (Photographed by Frank N. Meyer, in the mountains near Tsintse, China, May 6, 1907; P5282FS.)



FRUITING BRANCHES OF A RECENTLY INTRODUCED CHINESE PRINSEPIA (PRINSEPIA UNIFLORA). (SEE S. P. I. NO. 39432.)

This dry-land spiny shrub should be adapted to the extremes of drought and cold of the Great Plains area and the extreme Southwest. Its fruits are dark red in color and vary a good deal in size and in degree of acidity and amount of pulp. It is probably capable of considerable improvement by selection. (Photographed by Frank N. Meyer, Fuchengchen, Shansi, July 21, 1914; P13147FS.) Natural size.

39423 to 39442—Continued. (Quoted notes by Mr. F. N. Meyer.)

sized cherries, but of sour flavor. Said to grow here and there in the mountains near Yuncheng. Chinese name *Jou li tzŭ*, meaning 'fleshy plum.'"

39437 and 39438. PRUNUS SIMONII Carr. **Plum.**

39437. "(No. 2132a. Hotien, near Linhsien, Honan, China. July 7, 1914.) A large variety of green plum, having a small stone; flesh somewhat hard and sour. To be used for obtaining new types."

39438. "(No. 2133a. Paotienchen, Shansi, China. July 17, 1914.) A very large variety of green plum, with some violet blush on one side. Flesh somewhat hard, a good shipper, apparently. To be used for obtaining new types."

39439. PRUNUS ARMENIACA L. **Apricot.**

"(No. 2134a. Near Lienma, Shansi, China. July 20, 1914.) Wild apricots, growing in great profusion here and there on the mountain sides at altitudes between 3,000 and 5,000 feet above sea level. Trees of medium size, fruits generally small and sourish, but often most beautifully colored. The natives collect these fruits for their kernels, which are pickled in brine after the skin has been removed and are eaten as appetizers before meals. They are also used in high-class confectionery, like almonds, which, strange to say, the Chinese do not have. Chinese name *Shan hsing*, meaning 'mountain apricot.' For trial in some northern sections like Colorado, Utah, Wyoming, etc."

39440 to 39442. HOLCUS SORGHUM L. Poaceæ. **Kaoliang.**
(*Sorghum vulgare* Pers.)

39440. "(No. 2135a. Near Tachingkuan, on the Hwang River, Shansi, China. August 15, 1914.) A variety of kaoliang, with pale amber-colored seeds and having heavy spikes. Grown on reclaimed mud flats along the Yellow River, where the fields are often inundated for several weeks at a time. The plants grow extraordinarily tall, specimens of 15 feet in height not being rare."

39441. "(No. 2136a. Near Tungchowfu, Shensi, China. August 16, 1914.) A variety of kaoliang with reddish brown seeds; of slender, medium-tall growth and having orange-red stems. Grown mostly in small patches and strips around fields, principally for the bright-red skin of its stems, which is much used in fancy mat weaving."

39442. "(No. 2137a. Mingyangtcheng, Shansi, China. August 12, 1914.) A variety of kaoliang of medium-tall growth, having drooping panicles and shining, dark reddish brown seeds. Grown mostly in small patches and strips around fields. Is much used for broom manufacture."

39443. CALAMUS sp. Phœnicaceæ. **Palm.**

From Manila, Philippine Islands. Presented by the director, Bureau of Agriculture. Received November 18, 1914.

39444. ORYZA SATIVA L. Poaceæ. **Rice.**

From Bangkok, Siam. Presented by Mr. Carl C. Hansen, American vice and deputy consul general. Received November 19, 1914.

"Siamese paddy known as *Kaw Sawan*, which occurs in Thong, Amphur Muang Sawankaloke." (*Hansen.*)

39445 and 39446. ORYZA SATIVA L. Poaceæ. **Rice.**

From Valencia, Spain. Presented by Mr. Claude I. Dawson, American consul. Received November 17, 1914.

39445. "*Amonquili* rice, from the Alberique district, Province of Valencia, Spain. The commercial classes of rice in the Valencia regions, especially along the north and south banks of the Jucar River, or center of the rice district, are at present *Benlloch* or *Belloch* [S. P. I. No. 38685] and *Amonquili.* During 1913 the two were cultivated in the proportion of 80 per cent for the first and 20 per cent for the second, and in the season just beginning the *Benlloch* will certainly be overwhelmingly preferred in view of repeated excellent results obtained by experiment stations and in actual cultivation." (Extract from letter of *Mr. Claude I. Dawson, American consul, dated Apr. 25, 1914.*)

39446. "*Bomba* rice, from the Calasparra district, Province of Murcia, Spain. The *Bomba* variety, which formerly was more extensively cultivated in this region than all other classes, but in recent years gave such poor results and proved so susceptible to the undefinable disease known as the *falla* (the literal translation of which is 'deficient'), which so greatly depleted the crops of 1911 and 1912 that it is now hardly cultivated at all. The *Bomba* class was cultivated with more or less success, but although a select variety and excellent in its food value, cultivators never secured the best results claimed for it. It is of Japanese origin, but was imported here from China. In Lombardy (Italy) the grain is said to reach much larger size than in the vega of Valencia, due probably to more care in the selection of seed." (Extract from letter of *Mr. Claude I. Dawson, American consul, dated Apr. 25, 1914.*)

39447 to 39453.

From Calulo, Angola, Africa. Presented by Mr. W. P. Dodson. Received November 16, 1914. Quoted notes by Mr. Dodson.

39447 to 39451. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"This sorghum is ground up by the natives and used for porridge. Native name *Mballa.*"

39452. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"A very useful little black-eyed pea, called *Makunde.*

39453. ELEUSINE CORACANA (L.) Gaertner. Poaceæ. **African millet.**

"The native name is *Luco.* It is ground up by the natives and used for porridge."

39454 to 39456. Annona spp. Annonaceæ.

From Amani, German East Africa. Presented by the director, Imperial Agricultural Institute. Received November 11, 1914.

39454. Annona cherimola Miller. **Cherimoya.**

See S. P. I. Nos. 27483, 39352, and 39359 for previous introductions and description.

39455. Annona muricata L. **Soursop.**

39456. Annona senegalensis Persoon.

See S. P. I. Nos. 30835 and 38525 for previous introductions and description.

39457. Ficus sp. Moraceæ. Fig.

From Kiayingchow, China. Presented by Rev. George Campbell. Received November 28, 1914.

This seed was sent in by Mr. Campbell as *Shan p'i p'a*, or "mountain loquat."

39458 and 39459.

From Florida. Collected by Mr. David A. Bisset, of the Bureau of Plant Industry, on Mr. Charles Deering's place, Buena Vista, Fla. Received November 27, 1914. Quoted notes by Mr. Bisset.

39458. Duranta repens L. Verbenaceæ.

"A beautiful ornamental evergreen shrub of spreading habit and pendent branches, growing to a height of 8 feet and bearing racemes of small light-blue flowers followed by bright-yellow fruits. The glossy green foliage and the bright-yellow berries form a striking contrast and serve to make the shrub a most attractive one. Flowers and berries are seen on the plant at the same time."

39459. Lawsonia inermis L. Lythraceæ. Henna.

"An ornamental evergreen shrub with small glaucous leaves and panicles of small cream-colored flowers which possess a most agreeable fragrance. The flowers are followed by small green capsules which change from green through dark red to brown. Capsules are somewhat persistent, this being the only objectionable feature of the plant. Shrub adapted for ornamental purposes and possibly of value in perfumery."

39460 to 39462. Hordeum spp. Poaceæ. Barley.

From Pusa, India. Presented by Mr. Bernard Coventry, agricultural adviser to the Government of India, Imperial Department of Agriculture. Received November 24, 1914. Quoted notes by Mr. Coventry.

39460. Hordeum distichon ianthinum Koern.

"Black huskless, 2-rowed. Grown in the Punjab."

39461. Hordeum vulgare coeleste L.

"Amber-colored, huskless 6-rowed barley. Grown in the Punjab."

39462. Hordeum vulgare L.

"The common 6-rowed bearded barley, locally obtained. Grown in the Punjab."

39463. Gynopogon ilicifolius (Muell.) K. Schumann. Apocynaceæ.
(*Alyxia ilicifolia* Muell.)

From Wellington Point, near Brisbane, Queensland, Australia. Presented by Mr. James Pink. Received November 25, 1914.

"A white-flowered shrub growing about 6 feet high, producing a profusion of berries of a bright orange-scarlet. It should make a valuable ornamental plant for decorative purposes." (*Pink.*)

39464. Prunus armeniaca L. Amygdalaceæ. **Apricot.**

From Gizeh, Egypt. Secured by Prof. S. C. Mason, of the Bureau of Plant Industry, through Mr. Thomas W. Brown, Ministry of Agriculture, Gizeh. Received November 28, 1914.

39465 to 39484.

From China. Presented by Miss Paula Ritter, Chicago, Ill. Received November 30, 1914. Quoted notes by Miss Ritter.

39465. Brassica rapa L. Brassicaceæ. **Turnip.**

"*Man ching.* A good sweet turnip."

39466. Raphanus sativus L. Brassicaceæ. **Radish.**

"*Pai lo po.* Long white turnip, planted in spring, grows exceedingly large."

39467 and 39468. Brassica pekinensis (Lour.) Skeels. Brassicaceæ. **Pe-tsai cabbage.**

"A large winter cabbage of the Chinese kind. Planted in summer, transplanted in early fall or late summer, and left out until frost."

39469 to 39473. Cucumis sativus L. Cucurbitaceæ. **Cucumber.**

39469. "*Ch'ang tsai kua.* A long thick cucumber."

39470. "*Yüan su kua.* Round cucumber."

39471. "*Pai ch'ang su kua.* A large, thick, white gourd, similar to the cucumber; good. Plant like cucumber."

39472. "*Huang kua.* A long, slight cucumber. Can be planted as in America; might be called seedless; very good."

39473. "*Ch'ang su kua.* A kind of cucumber."

39474. Allium schoenoprasum L. Liliaceæ. **Chives.**

"*Chiu ts'ai.* A kind of onion grass."

39475. Lactuca sativa L. Cichoriaceæ. **Lettuce.**

39476. Luffa cylindrica (L.) Roemer. Cucurbitaceæ. **Loofah.**

"*Ssŭ kua.* Long cucumberlike."

39477. Ziziphus jujuba Miller. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

39478. Allium cepa L. Liliaceæ. **Onion.**

"Long onion. Should be hilled."

39479. Sesamum orientale L. Pedaliaceæ. **Sesame.**
(*Sesamum indicum* L.)

39465 to 39484—Continued. (Quoted notes by Miss Paula Ritter.)

39480. Beta vulgaris L. Chenopodiaceæ. **Beet.**

"*Chun ta.* The heavy leaves are used as greens, something like spinach."

39481. Daucus carota L. Apiaceæ. **Carrot.**

"Planted like ours and almost if not quite like some of our kinds."

39482. Brassica napus L. Brassicaceæ. **Rape.**

39483. Solanum melongena L. Solanaceæ. **Eggplant.**

"*Chi'eh tzŭ.*"

39484. Coriandrum sativum L. Apiaceæ. **Coriander.**

"*Yen ts'ai.* A green like parsley."

39485. Mangifera indica L. Anacardiaceæ. **Mango.**

From Ceylon. Presented by Mr. C. K. Moser, American consul, Harbin, Manchuria. Received December 2, 1914.

"A few months before I left Ceylon a Singhalese friend sent me a few mangos which he called *coconut* mangos, which he said were from Jaffna and very rare. They were about as large as a coconut and similar in shape, the skin and flesh a deep, rich yellow, except upon the cheeks, where burned a blush as glorious as any that ever dyed a peach. They were the most delicious fruits my wife and I ever tasted in all our lives. We never saw either in India or Ceylon any others like them, and when I wrote to Jaffna I was informed they did not grow there, but that they were evidently a rare variety which seldom fruited in Ceylon and then only in certain localities. Unfortunately, I was too busy to investigate them, and I have forgotten the Singhalese name which Dr. Brown, of Jaffna, gave for them, but I saved the seeds, and under separate cover I am sending them to you in the hope that you may be able to plant them in Florida and grow trees from them. If you should do this and succeed with them, I wish to stipulate only one thing; that one tree belongs to me, and that I shall have its fruits some time. It is certainly not commonly known in the Middle East, and it certainly is a fruit for a king. It has neither fibrous flesh nor petroleum flavor; the fruits from which these seeds came were perfect." (*Moser.*)

39486 and 39487.

From Penang, Straits Settlements. Presented by the director, Penang Botanical Gardens. Received December 3, 1914.

39486. Amorphophallus haematospadix Hook. f. Araceæ.

An araceous herb with short turbinate tubers, 2½ inches in diameter, 3-parted leaves 20 inches across, and oblanceolate leaflets. Peduncle brown, striated, terete. Sheaths appressed at the base, red-brown. Spathe 5 inches long; limb primrose yellow; tube striate with pink, dark purple within. Spadix sessile, 7 inches long, tip blood red. (Adapted from *Hooker, Flora of British India, vol. 6, p. 517.*)

39486 and 39487—Continued.

39487. ARISAEMA FIMBRIATUM Masters. Araceæ.

"*Arisaema fimbriatum* belongs to Engler's section *Trisecta*, having two stalked, leaves each deeply divided into three ovate-acute glabrous segments. The petioles are long, pale purplish rose colored, sprinkled with small purplish spots. The spathes are oblong acute or acuminate, convolute at the base, brownish purple, striped longitudinally with narrow whitish bands. The spadix is cylindrical, slender, terminating in a long whiplike extremity, much longer than the spathe. The flowers have the arrangement and structure common to the genus, the females being crowded at the base of the spadix, the males immediately above them, and these passing gradually into fleshy incurved processes, which i their turn pass gradually into long slender, purplish threads, covering the whole of the free end of the spadix." (*Masters. In Gardeners' Chronicle, 1884, vol. 2, p. 680.*)

39488. CARICA CANDAMARCENSIS Hook. f. Papayaceæ. **Papaya.**

From California. Presented by Mr. William A. Spinks, Monrovia, Cal. Received November 27, 1914.

"Seeds of a small-fruited papaya, from Spinks's ranch, near Duarte, Cal. The fruit itself of this variety seems to be worthless. It turns quite yellow on ripening." (*Spinks.*)

39489. BETULA JAPONICA Siebold. Betulaceæ. **Birch.**

From Hsiao Wutaishan, Chihli Province, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture.

Seeds collected from herbarium material carried under Meyer No. 1163.

"A tree ordinarily from 40 to 60, occasionally over 100 feet high, with a silvery white trunk; branches pendulous at the ends; young wood not downy, but furnished with glandular warts. Leaves broadly ovate, sometimes rather diamond shaped; 1 to 2½ inches long, three-fourths to 1½ inches wide; broadly wedge shaped or truncate at the base, slenderly tapered at the apex, doubly toothed; not downy, but dotted with glands on both surfaces; stalk one-half to three-fourths inch long. Fruiting catkins three-fourths to 1¼ inches long, one-third inch wide, cylindrical; scales smooth except on the margin; middle lobes the smallest. Native of Europe (including Britain), especially of high latitudes; also of parts of north Asia. This birch, with *B. pubescens*, forms the *B. alba* of Linnæus, but most authorities now concur in separating them. The species is easily distinguished from *B. pubescens* by the warts on the young branchlets and by the absence of down on all the younger vegetative parts. In the latter respect it differs from all the other cultivated birches except *B. populifolia*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 263,* under *B. verrucosa.*)

39490 and 39491.

From Funchal, Madeira. Presented by Mr. C. H. Gable, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received December 3, 1914.

39490. ANDROPOGON HIRTUS L. Poaceæ.

Distribution.—A perennial tufted grass about 3 feet high, found in the countries bordering on the Mediterranean and southward through Africa to the Cape of Good Hope.

39490 and 39491—Continued.

39491. HOLCUS HALEPENSIS L. Poaceæ. Johnson grass.
(*Sorghum halepensis* Pers.)

"Herbarium specimens show that the Madeira form differs usually in having dark purple panicles, and I think there might be other characters associated with this." (*Piper.*)

39492 and 39493.

From Bogota, Colombia. Presented by Capt. H. R. Lemly, United States Army, retired. Received December 3, 1914.

"To be tried in Florida and California."

39492. ANNONA CHERIMOLA Miller. Annonaceæ. Cherimoya.

39493. CARYOPHYLLUS JAMBOS (L.) Stokes. Myrtaceæ. Rose-apple.
(*Eugenia jambos* L.)

39494 to 39531. HORDEUM spp. Poaceæ. Barley.

From China. Presented by Mr. Thomas Sammons, American consul general, Shanghai, who secured it from the Special Envoy for Foreign Affairs. Received December 1, 1914.

39494 to 39496. HORDEUM VULGARE L.

39494. From Lanchi, Chekiang Province.

39495. From Sienku, Chekiang Province.

39496. From Fenghsien, Kiangsu Province.

39497. HORDEUM VULGARE COELESTE L.

From Lungchuan, Chekiang Province.

39498 to 39501. HORDEUM VULGARE L.

39498. From Jukao, Kiangsu Province.

39499. From Puchinghsien, Kiangsu Province.

39500. Early barley from Wuyi, Chekiang Province.

39501. From Shaohingfu, Chekiang Province.

39502. HORDEUM VULGARE COELESTE L.

From Changshan, Chekiang, Province. Used for food and for making a strong wine.

39503. HORDEUM VULGARE L.

From Siangshan, Chekiang, Province.

39504. HORDEUM VULGARE HIMALAYENSE Rittig.

From Yangchung, Chekiang Province.

39505. HORDEUM VULGARE COELESTE L.

White round barley from Yungkang, Chekiang Province.

39506 and 39507. HORDEUM VULGARE L.

39506. From Siangshan, Chekiang Province.

39507. From Paoshan, Kiangsu Province.

39508. HORDEUM VULGARE COELESTE L.

From Yunhwo, Chekiang Province.

39494 to 39531—Continued.

39509 to 39522. HORDEUM VULGARE L.

39509. From Juian, Chekiang Province.

39510. From Siangshan, Chekiang Province.

39511. From Sungkiangfu, Kiangsu Province.

39512. From Paoying, Kiangsu Province.

39513. From Sinchanghsien, Chekiang Province.

39514. From Sienku, Chekiang Province.

39515. From Wuyi, Chekiang Province.

39516. From Suianhsien, Chekiang Province.

39517. From Pingyanghsien, Chekiang Province.

39518. From Tientai, Chekiang Province.

39519. Superior grade from Shanghai, Kiangsu Province.

39520. From Kinhwafu, Chekiang Province.

39521. From Kunshan, Kiangsu Province.

39522. From Tinghai, Chekiang Province.

39523. HORDEUM VULGARE COELESTE L.

From Pingyanghsien, Chekiang Province.

39524 to 39531. HORDEUM VULGARE L.

39524. From Kiangpu, Kiangsu Province.

39525. From Chuhsien, Chekiang Province.

39526. From Iwu, Chekiang Province.

39527. From Yuhwanting, Chekiang Province.

39528. Red barley from Sinchanghsien, Chekiang Province.

39529. From Pinghu, Chekiang Province.

39530. From Pinghu, Chekiang Province.

39531. From Tinghai, Chekiang Province.

39532 to 39536. ALEURITES FORDII Hemsley. Euphorbiaceæ.
Tung tree.

From Experiment, Ga. Secured from the Agricultural Experiment Station. Received December 4, 1914.

39532. Fruit did not fall until nipped by light frost.

39533. Seed from 1-acre plat, row 5, tree 1. Large fruit, but a sparse bearer.

39534. One-acre plat, row 5, tree 7. Small prolific crop from one tree.

39535. Nut plat, row 2, tree 8. Fruit very large, but a sparse bearer; 14 pounds when harvested. Fruit matured and fell to the ground October 15 to 20, several days before frost.

39536. Mixed.

39537. LAVANGA SCANDENS (Roxb.) Buch.-Ham. Rutaceæ.

From Pusa, India. Presented by Mr. Bernard Coventry, agricultural adviser to the Government of India. Received December 9, 1914.

"A tall, lax-growing, but scarcely scandent shrub, with straggling branches, which are glabrous (as in every part of the plant), terete, bearing a rather long subulate decurved spine in the axil of the leaf. Leaves alternate, remote, 3-foliolate. Petiole 2 to 3 inches long. Leaflets 5 to 6 inches long, lanceolate, acuminate, entire, penninerved, pellucido-punctate. Flowers axillary, fasciculate, in a dense short raceme, much resembling those of the orange and not less fragrant. Calyx monophyllous, forming a short cylinder, 4-lobed at the mouth. Petals white, fleshy, oblong, four times as long as the calyx, at length patent and even reflexed. Stamens eight, united into a white fleshy tube for nearly their whole length, the apices free, and bearing each a linear or oblong-acuminate yellow anther. Pistil as long as the stamens. Ovary seated on a fleshy torus. Style columnar. Stigma large, globose." (*Botanical Magazine, pl. 4522, 1850.*)

Introduced for the work of the Office of Crop Physiology and Breeding Investigations.

39538 to 39541. PYRUS spp. Malaceæ. Pear.

From Jamaica Plain, Mass. Presented by Prof. C. S. Sargent, Arnold Arboretum. Cuttings received December 7, 1914. Quoted notes by Prof. Sargent.

39538. PYRUS BRETSCHNEIDERI Rehder.

"(No. 2.) 452–4. Raised from seed sent to the Arnold Arboretum from Peking, China, by Dr. Bretschneider. A pear with yellow, globose, juicy fruits, of fair quality, which we call *Pyrus bretschneideri*. Of great value as a decorative plant and, judging from the quality of the fruit, it has economic possibilities. I believe it is from this species that the best Chinese pears are derived."

39539 and 39540. PYRUS PHAEOCARPA Rehder.

"Raised from seed sent to the Arboretum from Peking, China, by Dr. Bretschneider. This species has very small brown fruit. Of great value as decorative plants."

39539. (No. 3.) 452–7. Fruit globose in form.

39540. (No. 4.) 452–9. Fruit pyriform.

39541. PYRUS OVOIDEA Rehder.

"(No. 5.) 4033. This is remarkable among pears in having ovoid, not obovoid, fruit. The fruit is of fairly good quality, and the tree has ornamental value on account of its large and abundant flowers and its good foliage which, unlike that of any other pear tree, turns to brilliant scarlet in the autumn. Judging by the shape of some of the Chinese fruits of which you have recently sent us photographs, this may be the origin of some of the cultivated Chinese pears. It is possible that one of the parents of the Kieffer pear may be this species. We know *P. ovoidea* only as a cultivated tree. It has long been cultivated in the Arboretum as *P. simonii*, under which name we had it from Kew, where in turn it had come from the museum in Paris. *P. simonii*, however, is a synonym of *P. ussuriensis*."

39542 and 39543.

From Littleriver, Fla. Presented by Mr. C. T. Simpson. Received December 2, 1914. Quoted notes by Mr. Simpson.

39542. ADENANTHERA PAVONINA L. Mimosaceæ. Circassian bean.

"A large tree from tropical Asia with dark-green bipinnate leaves and spiral pods of lenticular, brilliant red beans. These are used for food

39542 and 39543—Con. (Quoted notes by Mr. C. T. Simpson.)

by the natives of India and are strung into beautiful necklaces. The flowers are brownish, in long spikes. The tree is a rapid grower and is quite ornamental."

39543. KOPSIA ARBOREA Blume. Apocynaceæ.

"A large shrub or small tree belonging to the Apocynaceæ, with spatulate, thick, shining, dark-green leaves in whorls and small white flowers in clusters. These are followed by deep red, almond-shaped, nutlike fruits which are quite ornamental. It is a very handsome tree or large shrub, but it is very tender."

39544. AMYGDALUS sp. Amygdalacæ. **Wild peach.**

From near Chaoyu, near Luanfu, Shansi, China. Collected by Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received November 17, 1914.

"Dried fruits and stones of the real wild peach, collected at an elevation of 4,000 feet above the sea." (*Meyer.*)

39545. ORYZA SATIVA L. Poaceæ. **Rice.**

From Constantinople, Turkey. Presented by Mr. G. Bie Ravndal, American consul general. Received December 7, 1914.

"Information obtained from a rice dealer, whose principal house is in Moudania in the Vilayet of Broussa, shows that about 100 to 150 tons of rice is yearly grown in the district of Pazarkioi-Guemlek and about 150 to 200 tons in the Broussa district, but, owing to the increased amount sown, a crop of 400 tons is expected this year. All of the rice is consumed locally. It is described as being of better quality than that grown in Philippopolis, just across the Turkish frontier in Bulgaria, which is, I am told, very good rice. One kileh (20 okes = 56.40 pounds) of seed rice is usually sown on 3 deunums (2,569.44 square yards), producing 100 to 120 kileh (5,640 to 6,768 pounds) of good unshelled rice. Twenty okes (56.40 pounds) of unshelled rice yields 14 okes (39.48 pounds) of shelled rice. Sowing is usually done in the latter part of April and harvesting in August or the beginning of September. Rice grows in black, loose soil and is well watered by frequent rains as well as. lately, by irrigation canals which keep the soil damp. The cost of this rice, wholesale, is 3¼ to 3½ piasters ($0.143 to $0.154) per oke (2.82 pounds); unshelled rice can be bought for 55 to 60 paras ($0.0605 to $0.166) per oke (2.82 pounds). The past year it was sold for 3½ piasters ($0.154) per oke (2.82 pounds)." (*Ravndal.*)

39546. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Santiago de las Vegas, Cuba. Presented by Mr. J. T. Crawley, director, Agricultural Experiment Station. Received December 8, 1914.

Crystallina. "Noel Deerr in his 'Cane Sugar,' page 26, says that the *Crystallina* is a Batavian cane and is the lighter of the two purple Batavian canes. It is known in Hawaii as *Rose Bamboo*, in the British West Indies as *White Transparent*, in Cuba as *Cristallina*, and in Louisiana as *Home Purple*. It is of no distinct color, sometimes being a pale or ash color, and at other times a wine-colored cane. Its color depends upon its age and environments, the younger the cane the more color it contains, and the young parts of the same cane are more colored than the older parts. It is a comparatively thin cane, with long joints, and has a longitudinal channel running from the eye to the next joint above. It is prone to fall down from the effects of high wind, is comparatively soft, and furnishes, when mature, a juice of high sucrose and purity. It is a comparatively hardy cane and will give remunerative crops on soils and under conditions where many other canes would fail. While not immune to the attacks of insects and diseases, it is among the canes which most successfully resist them." (*Crawley.*)

39547 and 39548. PYRUS BETULAEFOLIA Bunge. Malaceæ. **Pear.**

From Jamaica Plain, Mass. Presented by Mr. Jackson Dawson, superintendent, Arnold Arboretum. Received December 8, 1914.

"*Pyrus betulaefolia* was obtained from Dr. Bretschneider from the mountains near Peking, China, and was sown at the Arboretum in 1882, so that our plants are about 31 years of age. (*Dawson.*)

"A slender, quick-growing, graceful tree, 20 to 30 feet high; young shoots covered thickly with a gray felt which persists the whole of the year. Leaves ovate or roundish ovate, 2 to 3 inches long, 1¼ to 1½ inches wide; long pointed, tapered or rounded at the base, regularly and sometimes rather coarsely toothed; downy on both surfaces at first, remaining so on the veins beneath throughout the season; dark green, smooth and lustrous above; stalk 1 to 1¼ inches long, gray felted like the shoot. Flowers 8 to 10 together in a corymb, white, each about three-fourths inch across, on a downy stalk three-fourths to 1 inch long; calyx downy, its short, triangular teeth falling away from the small roundish fruit, which is about the size of a large pea, grayish brown with white dots. Native of North China; introduced to Kew in 1882 through seeds sent by the late Dr. Bretschneider. The chief characteristics of the tree are its quick graceful growth and small fruits not crowned by calyx teeth. Its fruit would appear to be of no value, but the tree is used by the Chinese as a stock on which they graft fruiting pears." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 279.*)

39549. GARCINIA CORNEA L. Clusiaceæ.

From Bronx Park, New York City. Presented by the New York Botanical Garden. Received December 11, 1914.

See S. P. I. Nos. 11721 and 23882 for previous introductions and descriptions.

39550. CASTANEA sp. Fagaceæ. **Chestnut.**

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received December 10, 1914.

"Collected inside the city of Nanking, fall of 1914." (*Bailie.*)

39551. DIMOCARPUS LONGAN Louriero. Sapindaceæ. **Longan.**
(*Nephelium longana* Cambess.)

From Oneco, Fla. Presented by Reasoner Brothers. Received December 11, 1914.

39552 and 39553.

From Sibpur, Calcutta, India. Presented by Maj. A. T. Gage, superintendent, Royal Botanic Gardens. Received December 12, 1914.

39552. LAVANGA SCANDENS (Roxb.) Buch.-Ham. Rutaceæ.

See S. P. I. 39537 for previous introduction and description.

39553. MANGIFERA SYLVATICA Roxb. Anacardiaceæ.

Distribution.—A large tree found on the tropical slopes of the Himalayas and in the Khasi Hills, in India.

39554 and 39555.

From Goleta, Cal. Presented by Mr. Joseph Sexton. Cuttings received December 12, 1914. Quoted notes by Mr. Peter Bisset.

39554. Diospyros kaki L. f. Diospyraceæ. **Persimmon.**

"The parent tree bears staminate flowers in great profusion, as well as pistillate ones; therefore it is valuable as a pollinator for orchards of *kaki* varieties that do not bear staminate flowers. Fruits small to medium in size."

39555. Feijoa sellowiana Berg. Myrtaceæ. **Feijoa.**

"Cuttings from a variety bearing fruits about 2½ inches in length by 1½ inches in diameter and of excellent quality."

39556 to 39559.

From California. Received at the Plant Introduction Field Station, Chico, Cal. Quoted notes by Mr. Peter Bisset.

39556. Diospyros kaki L. f. Diospyraceæ. **Persimmon.**

"Scions collected on the place of Mr. K. Stevens, Santa Barbara, Cal., from a tree bearing staminate flowers in abundance, as well as pistillate ones. Will be of value as a pollinator for nonstaminate varieties. Fruits small, but produced in profusion."

39557. Crataegus lavallei F. Herincq. Malaceæ. **Hawthorn.**

"Scions received from Mr. Frank J. Hart, Los Angeles, Cal. A small shrubby tree growing to 20 feet in height, bearing bright orange-colored fruits."

39558. Ceratonia siliqua L. Cæsalpiniaceæ. **Carob.**

"Seeds received from Mr. C. W. Beers, horticultural commissioner, Santa Barbara, Cal. Gathered from trees growing in that vicinity. Will be used to grow stocks on which to bud the improved varieties of carobs."

39559. Tamárix sp. Tamaricaceæ. **Tamarisk.**

"Cuttings of an undetermined variety received from Mr. M. H. Crawford, Del Mar, Cal. The parent tree was about 12 feet in height, the branches long and slender, leaves long and grayish green, giving a plume-like effect."

39560 and 39561. Holcus sorghum L. Poaceæ. **Sorghum.**

(*Sorghum vulgare* Pers.)

From Bie, Angola, Africa. Presented by Mr. W. H. Sanders, American Board of Missions. Received December 10, 1914.

39560. Brown. 39561. White.

39562. Aleurites montana (Lour.) Wilson. Euphorbiaceæ. **Mu-yu tree.**

From Takhing, South China. Presented by Rev. J. K. Robb, American Reformed Presbyterian Church. Received December 10, 1914.

See S. P. I. No. 36897 for previous introduction and description.

39563. SPONDIAS LUTEA L. Anacardiaceæ.

From Bogota, Colombia. Procured through Mr. F. L. Rockwood, clerk of the American Legation. Received December 10, 1914.

"A fruit which is in the market about 3 months of the year. It is reddish yellow, grows on a small tree, like cherries on a small scale. It has never been cultivated, but has a very large seed and a pleasant, slightly acid taste, and the market name is *ciruelas*, which is Spanish for 'plums.' They are about three-fourths of an inch long and oblong in shape, a very handsome fruit. The season lasts only from June to September. This class of fruit is abundant in the valleys of the Andes in a warm climate where the temperature is from 70° to 80°, and it seems to do best below the coffee belt in valleys where it is shaded and well watered. The fruit is very popular in this market, especially among the children, and seems very healthful to use. The price is higher in proportion to other tropical fruits in the Bogota market, owing to the fact that none is cultivated and dependence is placed upon the wild crop only. This fruit is said to counteract the eating of too much meat." (*Rockwood.*)

39564. COUEPIA POLYANDRA (H. B. K.) Rose. Rosaceæ.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé. Received December 10, 1914.

39565. COBAEA sp. Polemoniaceæ.

From Guatemala City, Guatemala. Presented by Dr. R. Tejada A. Received December 2, 1914.

"Received from the Helvetia estate, situated in the jurisdiction of San Felipe, Retalhuleu, 2,500 feet." (*Tejada.*)

39566. CUCUMIS MELO L. Cucurbitaceæ. Muskmelon.

Seed received through Mr. G. P. Rixford, grown at the Plant Introduction Field Station, Chico, Cal.

South African melon seed, purchased in the San Francisco market. (P. L. H. No. 6117.)

39567. ANNONA DIVERSIFOLIA Safford. Annonaceæ. Ilama.

From San Salvador, Central America. Presented by Mr. Ralph D. Cornell, Claremont, Cal., through Mr. Wilson Popenoe, of the Bureau of Plant Industry. Received December 15, 1914.

"Called *Anona blanca* by the natives."

According to Mr. W. E. Safford (*Contr. from the U. S. National Herbarium, vol. 18, pt. 1, p. 19–20*), this interesting and valuable anona is called *ilama* at Colima, Tlatlaya, and Acapulco in southern Mexico. Mr. Safford describes the fruit as large, fleshy, and aromatic, with the juicy pulp frequently pink or rose tinted. It is shaped like a pineapple cheese and is usually covered with large stout protuberances, though sometimes they are lacking in fruits of the same tree. Undoubtedly this is one of the best of the anonas, though rare and little known. It should be given a careful trial in southern Florida and southern California.

39568. CLAUCENA LANSIUM (Lour.) Skeels. Rutaceæ. **Wampi.**
(*Clausena wampi* Oliv.)

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, Hawaii Experimental Station. Received December 15, 1914.

"This tree is rather rare in Hawaii, but is an interesting species, and I consider it worthy of limited cultivation." (*Higgins.*)

"A small tree, 18 to 20 feet, with luxuriant foliage, native of South China; nearly glabrous pinnate leaves; small dense panicles of whitish sweet-scented flowers, produced in April; fruit ripens in June and July; an edible berry, borne in clusters like the grape, individual fruit nearly globose, the size of a large marble, rough, tough, orangelike rind, pale straw yellow in color and covered with glands full of green balsamic oil; seeds 1 to 3 nearly filling the fruit cavity; a small quantity of almost colorless juicy pulp between the seeds and the rind, with an agreeable, aromatic acid taste. Propagated by seeds and layers. Often used as a dessert fruit, but mostly for preserves. The leaves are used in flavoring." (*Report of the Hawaii Agricultural Experiment Station, 1914, p. 33.*)

39569. AMPELOPSIS MEGALOPHYLLA Diels and Gilg. Vitaceæ.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Cuttings received December 17, 1914.

See S. P. I. No. 34537 for previous introduction and description.

39570. CASTANEA sp. Fagaceæ. **Chestnut.**

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received December 17, 1914.

39571. MYRISTICA MALABARICA Lamarck. Myristicaceæ. **Kánagi.**

From Bombay, India. Presented by Mr. V. I. Parekh. Received December 14, 1914.

"Jangli candle seeds, which can be obtained from Indian jungles, but are generally neglected. The oil extracted is used for burning purposes only. It contains a resinous substance, very sticky, and expected to turn out to be of some use in preparing alizarine colors or mordant, being oily. Can be had in large quantity if collected at the proper time, at a very small cost." (*Parekh.*)

"A large tree of the western coast from the Konkan southwards in evergreen forests. The seed yields a yellowish oil when bruised or boiled. It is used medicinally and for illumination. The fruit appears to have been used for adulterating the nutmegs and mace of *M. fragrans*. The wood is moderately hard and used in building." (*Watt, Commercial Products of India.*)

39572. CRATAEGUS ARNOLDIANA Sargent. Malaceæ. **Hawthorn.**

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received December 17, 1914.

To be grown as stocks. For previous introduction, see S. P. I. No. 34782.

39573. Garcinia multiflora Champion. Clusiaceæ.

From Kiayingchow, China. Presented by Rev. George Campbell. Received December 17, 1914.

"*Shan pi pa.* Dr. Chang sent me these fruits and added a note to the effect that people said the fruit is entirely wholesome. It has a pleasant subacid taste, something like an orange, but there is little meat. From a bush with deeply lobed leaves." (*Campbell.*)

39574 and 39575. Berberis spp. Berberidaceæ. Barberry.

From Elstree, Herts, England. Presented by Hon. Vicary Gibbs, Aldenham House Gardens. Plants received December 21, 1914.

39574. Berberis aggregata Schneider.

"This is one of Wilson's recent introductions from China, and was shown (at a Royal Horticultural Society show) as a richly berried, open-spreading bush about 18 inches high. The leaves, dull green above and gray green below, are in axillary rosettes of about nine. They vary from ovate and entire to oblanceolate, with a few teeth or spiny hairs on the upper half, and are generally about one-half by one-fourth inch. The berries are small, nearly globular, and borne in dense close-seated clusters, in one of which we counted as many as 21 berries, though there are, more generally, only half that number. They are a very charming creamy green color, suffused with coral, and reminding one of those of *B. wilsonae.*" (*Gardeners' Chronicle, September 27, 1913.*)

39575. Berberis subcaulialata Schneider.

"A deciduous shrubby western Chinese barberry with strongly angulate branches, oblanceolate leaves, one-half to 1 inch long, acute, rarely 3-pointed at the apex, whitish beneath; flowers in very short 6 to 8 flowered racemes or rarely fascicled, nodding. Fruit globose, red." (*Rehder. In Bailey, Standard Cyclopedia of Horticulture.*)

See S. P. I. No. 37497 for previous introduction.

39576. Quercus cyclobalanoides Trelease. Fagaceæ. Oak.

From Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received December 21, 1914.

"Fine, large tree, which has, as I am told, a most excellent wood. The oak will grow well in your colonies, Porto Rico, or the Philippines." (*Purpus.*)

39577. Crataegus pinnatifida Bunge. Malaceæ. Hawthorn.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received December 21, 1914.

39578. Alsophila sp. Tree fern.

From Baguio, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamao, Bataan. Received December 19, 1914.

"This is a tree fern, attaining a height of about 20 feet, with slender stem and very graceful, growing between 3,000 and 4,000 feet altitude. The stems are now being utilized by the Bureau of Education at their trade school in

Baguio in making flower stands, picture frames, and various small, useful, and ornamental articles for the office or the home, which are really ornamental, picturesque, and distinctly different from anything in that line that I have ever seen. The plants are very abundant, and if the stems would ship successfully and the plants later could be sold at a price that would be remunerative to the importer, you would gain an ornamental that in its line would be second to none." (*Wester.*)

39579 to 39581. Citrus spp. Rutaceæ.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamao Experiment Station. Received December 19, 1914. Quoted notes by Mr. Webster.

39579. Citrus grandis (L.) Osbeck. **Panuban.**
(*Citrus decumana* Murr.)

"*Panuban.* An oblate fruit the size of a large orange, smooth, of the same color as the pummelo, thin skinned, juicy, and well flavored. I have not seen the trees, but believe it to be a hybrid between the pummelo and the orange or mandarin."

"A spiny tree, 3 to 4 meters tall, of robust growth; young growth pubescent; leaves 12 to 17 centimeters long, 4.7 to 8 centimeters wide, oblong ovate, crenate, coriaceous; base rounded; petiole 15 to 23 millimeters long, wing margins narrow, at most 18 millimeters broad, and cuneiform; flowers not seen; fruit 5.7 centimeters long, 7 centimeters in transverse diameter; oblate with shallow apical cavity; surface smooth, lemon yellow; skin very thin; pulp contained in 11 to 12 locules, yellowish, fairly juicy, subacid, acidity and sweetness well blended, aromatic and well flavored; seed large, polyembryonic. The *panuban* is said to bloom about New Year, and the fruit ripens in September to November; the trees are reported to be very prolific. The *panuban* has been reported only from Lias, Bontoc, where half a dozen trees are said to grow. Possibly it may be an accidental hybrid between the pummelo and the orange or mandarin; if it is simply a mutation it is one of the most striking of the species. However this may be, the pummelo character is strongly dominant in both the foliage and the fruit. Very well flavored, the fruit is too dry to be acceptable to a discriminating public, but it is not improbable that under cultivation the juiciness would increase. In such a case the *panuban* might become a fruit of commercial importance." (Adapted from *Philippine Agricultural Review, vol. 8, first quarter, 1915, p. 12.*)

39580. Citrus medica odorata Wester. **Tihi-tihi.**

"*Tihi-tihi,* the leaves of which analyze 0.6 per cent of essential oil. The plant is a shrub, fruiting three years from seed; the fruit is of no value.

"A small, thorny shrub, seldom exceeding 2.5 meters in height, with sharp, stout spines; young growth bright green; leaves 7.5 to 11 cm. long, 4.3 to 6.5 cm. broad, elliptical, rather thick and leathery, serrate, of distinct fragrance; base rounded; apex notched; petioles very short, 4 to 6 mm. long, not winged; flowers one to four, in axillary compressed cymes, sessile, rarely exceeding 38 mm. in diameter; calyx large, prominently cupped; petals four to five, fleshy, white, with a tinge of purple

39579 to 39581—Continued. (Quoted notes by Mr. P. J. Wester.)

on the outside; stamens 36 to 42, unequal, shorter than stigma; filaments united in groups of four to six; pollen abundant; gynœcium frequently aborted; ovary elevated on a bright green disk, large, 4 mm. long, 13 to 14 loculed; style tapering from ovary, scarcely more slender, rather short; stigma large, knoblike, and cleft; fruit 60 to 65 millimeters long, 7 to 10 cm. in transverse diameter, weighing 300 to 475 grams, oblate, with a shallow basal cavity, and sometimes a mammillate apex, more or less ridged longitudinally, fairly smooth, clear lemon yellow; lenticels scattered, depressed; oil cells large, equal or a trifle raised; skin rather thick; pulp grayish, rather dry, sharply acid, of lemon flavor; juice cells long and slender; seeds many, sometimes 125 in a single fruit, short, broad, and flattened. The *tihi-tihi* is a rare plant found in cultivation in Cebu and Bohol; one plant has been seen in Misamis, Mindanao. The plant is very precocious, fruiting as early as the third year from seed, everbearing. The fruit is used by the Filipinos in washing their hair. It is not eaten, and is of no commercial importance. The *tihi-tihi* differs from the citron in its green, tender, highly aromatic growth, the leaves having been found to contain 0.6 per cent essential oil, as analyzed by the Bureau of Science. The fruit is strikingly different from the citron." (*Citrus Fruits in the Philippines, Agricultural Review, first quarter, 1915.*)

39581. CITRUS MEDICA NANA Wester.

"Seeds of a lemon that fruits the second year from seed and is exceedingly prolific. The fruit is dry and seedy, but the variety might be useful in hybridization work for the production of very dwarf and precocious varieties."

39582. ALEURITES FORDII Hemsley. Euphorbiaceæ. **Tung tree.**

Grown at the Plant Introduction Field Station, Rockville, Md., under station No. 6587.

Plants grown from seed received from Mr. S. H. Gaitskill, McIntosh, Fla., from trees growing on his place, which were sent to him by the Office of Foreign Seed and Plant Introduction.

39583. CASIMIROA EDULIS La Llave. Rutaceæ. **White sapote.**

Grown at the Plant Introduction Field Station, Miami, Fla.

Plants grown from seed of selected fruits taken from a tree growing at the station, Miami, Fla.

39584. LAUROCERASUS ILICIFOLIA (Nutt.) Roemer. Amygdalaceæ.
(*Prunus ilicifolia* Walp.)

Plants grown at the Plant Introduction Field Station, Chico, Cal.

"An evergreen tree, attaining a height of 30 feet and forming a dense crown. Leaves hollylike, thick and shiny. Tree bears small, white flowers in slender racemes less than 2 inches long; red or black fruits, one-half inch in diameter, of a pleasant subacid flavor, but somewhat astringent. Trees suitable for hedges." (*Peter Bisset.*)

38585 and 39586.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received December 24, 1914.

To be grown as stocks.

39585. Crataegus lauta Sargent. Malaceæ. **Hawthorn.**

"A spiny arborescent shrub, allied to *C. ellwangeriana*, with ovoid fruit, bright orange-red, three-quarters of an inch long. Much planted in Boston parks, but of unknown origin." (*Rehder. In Bailey, Standard Cyclopedia of Horticulture.*)

39586. Kalopanax ricinifolius (S. and Z.) Miquel. Araliaceæ.
(*Acanthopanax ricinifolium* Seem.)

See S. P. I. Nos. 20312 and 34783 for previous introductions and description.

39587 and 39588. Holcus spp. Poaceæ.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received December 21, 1914. Quoted notes by Dr. Trabut.

39587. Holcus halepensis × sorghum.

"Var. *annuum*. Called *Mezera* by the natives. 1914."

39588. Holcus halepensis × sorghum.

"Described as a variety cultivated in the same region which hybridizes with *H. halepensis* and gives the *Mezera*, but under cultivation apparently a hybrid between Johnson grass and sorghum."

39589. Phaseolus mungo L. Fabaceæ. **Urd.**

From Manila, P. I. Presented by Mr. William S. Lyon. Received December 19, 1914.

"Seeds of a native Phaseolus. I lay no claim to its virtues as a seed producer; indeed I have it growing side by side with a number of other species, and I find it relatively inferior as such, but as a cover crop I have wholly discarded all of the scores of leguminous plants I have tested in favor of this. I have made distribution of the seeds to a number of abaca planters and they are most enthusiastic over its utility in young hemp plantations. Like myself, they all have come to discredit cowpeas and all velvet beans, *Lyon* included, for the reason that in good soils the growth of the cover crop is so exuberant that except at great outlay for labor any plants under 1 meter tall are smothered out of existence. On the other hand, in old plantations which are fairly well shaded the cowpeas and velvet beans make a spindling and inefficient growth to accomplish the main purpose of choking out a number of objectionable weeds and grasses which, notwithstanding the shade, flourish to the detriment of the abaca. I have more than an acre now in my rose garden and for two seasons have grown this bean to the exclusion of all others. It makes a low, dense, spreading mat about a foot thick and not much disposed to climb; the result is I am able to plant two crops a year among my dwarf rose bushes without choking them, with a marked saving in cultivation and irrigation, as well as a marked improvement in the quantity and quality of the flowers obtained." (*Lyon.*)

39590 and 39591. HORDEUM VULGARE L. Poaceæ. **Barley.**

From Maison Carree, Algeria. Presented by Mr. I. Ducellier, Algerian Agricultural School. Received December 10, 1914.

"Square barley."

39590. From the valley of the Cheliff.

39591. Grown on the high plateau of the valley of Constantine.

39592. HORDEUM VULGARE L. Poaceæ. **Barley.**

From Barquisimeto, Venezuela. Through Mr. Thomas W. Voetter, American consul, La Guaira. Received December 22, 1914.

"This seed was grown near Barquisimeto, in the Puerto Cabello consular district. I have been able to learn of no other vicinity in Venezuela besides this where barley is grown." (*Voetter.*)

39593. ROSA ODORATA GIGANTEA (Collett) Rehder and Wilson. Rosaceæ. **Rose.**

From Hollywood, Cal. Presented by Mr. E. D. Sturtevant. Received December 24, 1914.

See S. P. I. Nos. 27301 and 28030 for previous introductions and description.

"The giant rose of the Himalayas (*Rosa gigantea*) probably has larger flowers than any other wild rose in existence. In their native forests the flowers often reach a diameter of 6 inches; cultivated they should exceed this. The rose is furthermore a vigorous grower. It was introduced to the United States in 1902 by the Office of Foreign Seed and Plant Introduction of the United States Department of Agriculture, and on a number of occasions since then, and it at once attracted the interest of hybridizers, who try to retain its size and vigor while increasing its hardiness by crossing with a more cold-resistant specimen. Dr. F. Franceschi, of Santa Barbara, Cal., has made several hybrids which showed vigor and hardiness as well as great beauty, the flowers being creamy white with yellow centers. At the Botanic Gardens in Lisbon, Portugal, it has been crossed with the well-known rose Reine Marie Henriette, and large, rich, orange-yellow flowers produced. In warmer regions, such as California, the Southern States, and the Riviera of the Mediterranean, it is cultivated for its own sake, and its flowers, sometimes not borne very profusely, are often pure gold in color. Sir Joseph Hooker mentions a red form in Sikkim, India, but the best known type is white. Its fruit, as large as a small apple, is edible and sometimes sold in the Indian markets. The bush often makes a growth of 40 feet or more, dropping its blossoms (which at a short distance look like clematis) from the tops of tall trees in upper Burma and western China. It flourishes best in shade." (*American Breeders' Magazine, vol. 4, p. 108–109, 1913.*)

39594 to 39609.

From Shiraz, Persia. Presented by Col. J. N. Merrill. Received December 21, 1914. Quoted notes by Col. Merrill.

39594. HOLCUS SORGHUM L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

"No. 1. Sorghum corn from Goshne Kon."

39595. HORDEUM DISTICHON L. Poaceæ. Barley.

"No. 2. Barley from Fariab."

39594 to 39609—Continued. (Quoted notes by Col. J. N. Merrill.)

39596. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"No. 3. Sorghum of Shiraz."

39597. HORDEUM DISTICHON L. Poaceæ. **Barley.**

"No. 4. Barley from Mardasht. This is dry cultivated, i. e., gets very little water."

39598 and 39599. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

39598. "No. 5. Wheat from Fariab."

39599. "No. 6. Wheat of Mardasht. Dry cultivated, getting very little water."

39600. PANICUM MILIACEUM L. Poaceæ. **Millet.**

"No. 7. Millet from Koshkehidak."

39601 and 39602. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

39601. "No. 8. Wheat from Siyakh."

39602. "No. 9. Wheat from Bavanat."

39603. ORYZA SATIVA L. Poaceæ. **Rice.**

"No. 10. Rice from Deh Noo."

39604 to 39606. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

39604. "No. 11. Wheat from Ramjerd."

39605. "No. 12. Wheat from Garm Sir; Garm Sir means the warm country and refers to the part of Fars Province where the nomad tribes go to spend the winter; it is not far from the Persian Gulf."

39606. "No. 13. Wheat from Sarhad."

39607 to 39609. ORYZA SATIVA L. Poaceæ. **Rice.**

39607. "No. 14. Rice from Shames Abad."

39608. "No. 15. Rice from Ali Abad."

39609. "No. 16. Rice from Gel Khan."

39610 to 39617. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ.
Sweet potato.

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas, Cuba. Received December 31, 1914. Quoted notes by Mr. Roig.

"These varieties have been planted from vines in average soil, unfertilized and not irrigated except at the time of planting. The yield notes accompanying each variety have been obtained from the following calculation based on the result of the crop this year. The varieties have been planted three times successively at the station and the tubers tested as many times. The vines were planted at the distance of 33 cm. between plants and 1 meter between rows, which makes three plants per square meter, that is, 402,000 plants in a caballería, a Cuban land measure equivalent to 33⅓ acres. I have assigned 400,000 plants in round numbers to each caballería. Sweet potatoes are commonly planted in Cuba at the distance of 30 cm. between plants and one Cuban vara (848 mm.) between rows. The prices here at present are 30 cents to the arroba (25 pounds) as sold to the dealer by the guajiros (peasants). The dealer sells the sweet potatoes at 2 cents per pound. The numbers of the varieties refer to my collection. The time for each to mature is six months."

39610. "No. 189. *Sapotillo*, yellow inside. From El Caney, Oriente; 20,869 arrobas per caballería."

39611. "No. 107. *San Juan*, white. From Zarzal, Oriente; 36,051 arrobas per caballería."

39612. "No. 126. *Martinica morado*. From Bayamo, Oriente; 83,478 arrobas per caballería."

39613. "No. 20. *Brujo morado*, yellow inside. From Cienfuegos, Santa Clara; 7,192 arrobas per caballería; June."

39614. "No. 28. *Disciplinado colorado*, white. From Camaguey; 33,285 arrobas per caballería."

39615. "No. 148. *Jiguani*, white inside. From Jiguani, Oriente; 33,964 arrobas per caballería."

39616. "No. 33. *Centauro amarillo*, pale yellow. From Camaguey; 23,130 arrobas per caballería. To this variety a prize was awarded in the Camaguey Agricultural Exhibition."

39617. "No. 229. *Amarillo*, pale yellow. From Camaguey; 32,800 arrobas per caballería."

39618. CASTANEA sp. Fagaceæ. **Chestnut.**

From Songdo, Chosen (Korea). Presented by Rev. C. H. Deal, Anglo-Korean School. Received December 28, 1914.

39619. CLEMATIS sp. Ranunculaceæ. **Clematis.**

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received December 10, 1914.

Arnold Arboretum No. 7391.

39620. PUNICA GRANATUM L. Punicaceæ. **Pomegranate.**

From Mobile, Ala. Presented by Mr. Marsena A. Parker. Received December 2, 1914.

"The largest of the fruits weigh 1¼ to 1½ pounds and are about the size of an average grapefruit; skin is yellow with occasionally a brownish spot; seeds are pink; and the flavor is good, rather sweet, and when fully ripe, just as they burst open, extremely sweet."

39621. PRUNUS SERRULATA Lindl. Amygdalaceæ. **Flowering cherry.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Co., Ltd. Received December 29, 1914.

For previous introduction, see S. P. I. No. 32860.

"Seeds of the wild cherry of Japan upon which the Japanese graft their flowering cherries. The Yokohama Nursery Co. is authority for the statement that this wild cherry can be reproduced very easily from cuttings and that the scions of many varieties are grafted on it and not budded, as is the custom in this country with the flowering cherries. It has been suggested that this new stock may possibly be easier to cultivate than the mazzard or mahaleb seedlings which are now in use and the propagating work done in the winter on the bench instead of in the field. The difficulty in getting a stock that is large enough to bud in regions where the leaf-blight seriously attacks the mazzard or mahaleb seedlings has suggested a trial of this Japanese wild cherry, which is quite immune to the leaf-blight and which possibly may be a way out of this difficulty Recent tests in this country have shown that this wild form strikes root readily in sand." (*Peter Bisset.*)

39622 to 39625.

From Bogota, Colombia. Presented by Señor Jorge Ancizar. Received December 30, 1914. Quoted notes by Señor Ancizar.

39622. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

39623. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn.)

39624. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

"Small potatoes that come much earlier than any other potatoes and are very much appreciated here. They are yellow inside."

Tubers.

39625. CEREUS sp. Cactaceæ. **Pitahaya.**

"*Pitahaya*, a kind of creeping cactus that bears a beautiful large white flower and gives a very nice fruit; to be eaten with a little sugar and wine sometimes."

Cuttings.

39626. THUNBERGIA GIBSONI S. Moore. Acanthaceæ.

From Lawang, Java. Presented by Mr. M. Buysman, Botanic Gardens. Received December 26, 1914.

"From eastern tropical Africa; it is a fine climbing plant with fiery orange-red flowers." (*Buysman.*)

"The flowers are clear orange color, about 1¼ inches in diameter. They rise solitary from the leaf axils of the prostrate growths on erect 3-inch purplish pedicels, and burst through one side of the balloonlike paired and united crimson-stained bracts. The leaves are opposite, about an inch long, triangular, firm textured, and glossy above. Introduced from British East Africa." (*Gardeners' Chronicle, May 17, 1913.*)

39627 to 39630.

From Petrograd, Russia. Presented by the director, Imperial Botanic Garden. Received December 28, 1914.

39627 to 39629. TAMARIX spp. Tamaricaceæ. **Tamarisk.**

39627. TAMARIX KARELINI HIRTA Litv.

From Turkestan.

39628. TAMARIX PENTANDRA Pallas.

Var. *brachystachys*. On clayey deserts, Farab, Bokhara, Turkestan, October 23, 1914. Collected by Mr. H. B. Androsov.

39627 to 39630—Continued.

The species is described as "A deciduous shrub or small tree, ultimately from 12 to 15 feet high, or upward, with long, slender plumose branches. Leaves very small, pointed, the largest one-eighth inch long, arranged at intervals along the flowering shoots; the smallest one-fifth as large and crowded 50 or more to the inch. Flowers arranged densely in slender, sometimes branching racemes, 1 to 5 inches long, each tiny blossom one-eighth inch across, rosy pink; they cover the whole terminal part of the current year's shoot, which is thus transformed during August into a huge plumelike panicle of blossom as much as 3 feet long. Sepals, petals, and stamens all 5 in number. Native of southeastern Europe and Asia Minor, especially on the banks of tidal rivers. This beautiful tamarisk is quite hardy and one of the most pleasing of late-flowering shrubs. It should be planted in groups large enough for its soft, rosy plumes to produce an effect in the distance. To obtain it at its best, it is necessary to cut it back every winter almost to the old wood. It then sends up the long slender branches which flower for six weeks or so in August and September. It is propagated with the greatest ease by making cuttings, 6 to 9 inches long, in early winter of the stoutest part of the season's growth, and putting them in the ground out of doors, like willows. It has been called a variety of *T. hispida*, but that species is very distinct in its downy twigs and leaves." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 575–577.*)

39629. TAMARIX FLORIDA ALBIFLORA Bunge.

Edge of sandy deserts, Farab, Bokhara, Turkestan, October 14, 1914. Collected by Mr. H. B. Androsov.

39630. MYRICARIA GERMANICA (L.) Desv. Tamaricaceæ.

A shrub from 6 to 8 feet high, with very narrow flat leaves, and spikes of pink flowers, indigenous through most parts of Europe and the Caucasus and extending into the Himalayas. This species belongs to a genus separated from Tamarix and containing those plants of the order Tamaricaceæ which have 10 stamens and feathery seeds inserted in the middle of the valves of the capsule. The stems of this species are slender, striate, glaucous green when young and the leaves are linear lanceolate. Racemes 1 to 18 inches long, spiked, lateral or terminal, and the bracts have broad membranous margins. The branches of this species are employed in the Himalayas as a fodder for sheep and goats and the wood, which is hard and of a whitish color, is used for fuel. (Adapted from *Hooker, Flora of British India*, *Watt, Dictionary of the Economic Products of India*, and *Lindley, Treasury of Botany.*)

39631 to 39634.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received December 31, 1914. Quoted notes by Mr. Bailie.

39631. ZANTHOXYLUM BUNGEI Planchon. Rutaceæ.

"*Hua chiao.* Leaves of shrub and seeds used in flavoring."

39632. SOLANUM DULCAMARA L. Solanaceæ.

"A perennial vine of the nightshade family, with beautiful red berries that make the hedges look ornamental."

39631 to 39634—Continued. (Quoted notes by Rev. Joseph Bailie.)

39633. Clematis sp. Ranunculaceæ. **Clematis.**

"Purple mountain clematis."

39634. Lonicera sp. Caprifoliaceæ. **Honeysuckle.**

"Red-berried shrub having flowers like those of woodbine or honeysuckle. Shrub just now (November 21) is beautiful with red berries."

39635. Aleurites fordii Hemsley. Euphorbiaceæ. **Tung tree.**

From Riverside, Cal. Presented by Mr. Fred M. Reed. Received at the Plant Introduction Field Station, Chico, Cal., December 30, 1914.

"Being on a main-traveled road and a strange-looking tree, they attract a great deal of attention, and people carry them off as curiosities and occasionally eat them." (*Reed.*)

39636 to 39660.

From Darjiling, India. Presented by Mr. G. H. Cave, Lloyd Botanic Garden. Received December 15, 1914.

39636. Albizzia lebbeck (L.) Benth. Mimosaceæ. **Lebbek.**

See S. P. I. Nos. 9038 and 18509 for previous introductions and description.

"This tree, which is used in Reunion as a shade crop for coffee, bears the names there of *noir blanc, noir rouge;* its wood is white, with red, brown, or reddish black heart, solid, well veined, and gives good knees for boat building; it is employed in turnery, cabinetmaking, and for wheelwright work. Exposed to the weather it does not last more than 10 or 15 years. The trunk yields a gum analogous to gum arabic. In Senegal the astringent bark and seeds are employed for diarrhea, dysentery, and hemorrhoids. The oil extracted from the seeds is used for leprosy. The flowers are emollient and applied in cataplasms for boils, etc." (*De Lanessan, Les Plantes Utiles des Colonies Françaises.*)

39637. Anthocephalus cadamba (Roxb.) Miquel. Rubiaceæ.

"A large deciduous tree, wild in northern and eastern Bengal, Pegu, and the western coast; cultivated in northern India. During the first two or three years it grows very fast, about 10 feet a year, the girth increasing at the rate of 1 inch a month. After 10 or 12 years the growth becomes very slow. The bark is used medicinally as a febrifuge and tonic. The fruit is eaten, and the foliage is sometimes used as fodder for cattle. The wood is white, with a yellowish tinge, soft and evenly grained, and much used for building purposes. This species is cultivated for ornamental purposes and for the grateful shade its large, coarse foliage affords." (*Watt, Dictionary of the Economic Products of India.*)

39638. Boehmeria rugulosa Weddell. Urticaceæ.

"A small tree with grayish-brown branches met with in Garhwal, Kumaon, Nepal, Sikkim, and Bhutan. The wood is of a reddish color, moderately hard, evenly grained, durable, and seasons well. It weighs about 41 pounds per cubic foot and is very easily worked. It is used in the manufacture of bowls, milk pails, churns, cups, and tobacco boxes." (*Watt, Dictionary of the Economic Products of India.*)

39636 to 39660—Continued.

39639. Bucklandia populnea R. Brown. Hamamelidaceæ.

"A large evergreen tree attaining a height of 80 feet, met with in the eastern Himalayas, Khasi Hills, and the Hills of Martaban, from 3,000 to 8,000 feet above the level of the sea. The wood is a grayish brown, rough, moderately hard, close-grained, and durable. It is extensively used in Darjiling for planking and for door and window frames." (*Watt, Dictionary of the Economic Products of India.*)

39640. Cassia laevigata Willd. Cæsalpiniaceæ.

See S. P. I. No. 3324 for previous introduction.

"A glabrous shrub native of the American Tropics, with 3 to 4 pairs of ovate-oblong or ovate-lanceolate acuminate leaflets, and yellow flowers in terminal or axiliary racemes. Pod leathery, 2 to 3 inches long, nearly cylindrical." (*Bailey, Standard Cyclopedia of Horticulture.*)

39641. Dichroa febrifuga Loureiro. Hydrangeaceæ.

"A somewhat virgate, rare greenhouse shrub, 5 to 9 feet tall, with lanceolate or obovate-lanceolate leaves 8 inches long and glabrous except on the nerves. In habit this species resembles a hydrangea, with violet-blue flowers in pyramidal panicles a foot across and handsome blue berries. The genus Dichroa consists of a single species and is found in the Himalayas, Malaya, and China, occurring in the temperate Himalayas at altitudes between 5,000 and 8,000 feet. Some authorities state that the Chinese form has larger flowers than this Indian one." (*Bailey, Standard Cyclopedia of Horticulture.*)

39642. Edgeworthia gardneri (Wall.) Meissn. Thymelaeaceæ.

See S. P. I. Nos. 9162 and 23754 for previous introductions and description.

"A large bush found in the Himalayas at between 4,000 and 9,000 feet elevation. The strong, tough fiber obtained from the long, straight, sparsely branched twigs of this bush must, sooner or later, become one of the most valuable of Indian fibers. The finest qualities of Nepal paper are made from this plant, which produces a paper whiter than that obtained from *Daphne cannabina.*" (*Watt, Dictionary of the Economic Products of India.*)

39643. Ficus hookeri Miquel. Moraceæ.

"A tree with all its parts glabrous; leaves thinly coriaceous, long petiolate, broadly elliptic or subovate elliptic, with short, broad, blunt apical cuspis, edges entire, base rounded or slightly narrowed, 3-nerved; lateral nerves six to eight pairs, not very prominent; under surface pale; length 5 to 11 inches; stipules linear lanceolate, flaccid, 1.5 to 3.5 inches long, caducous; receptacles axillary, in pairs, sessile, obovate, depressed, when ripe from 0.5 to 1 inch across; the large basal bracts united to form an entire cartilaginous cup which envelops the lower third of the ripe receptacle; male flowers numerous, scattered, with no proper perianth, stamen single on long filament which is embraced by the lanceolate scales of the receptacle; gall and fertile female flowers alike, except as regards the contents of the ovary, the perianth of four to five linear-lanceolate pieces, achenes of a very dark brownish color, style rather short, thick. Habitat, Sikkim Himalayas and Khasi Hills, from 2,000 to 6,000 feet. Not common. At once distinguished by the singular cup formed by the united basal bract." (*Annals of the Royal Botanic Garden, Calcutta, vol. 1, p. 36.*)

39636 to 39660—Continued.

39644. Hypericum patulum Thunberg. Hypericaceæ.

St.-John's-wort.

See S. P. I. Nos. 1710 and 39118 for previous introductions and description.

A dwarf shrub in England, but said to grow as high as 6 feet high in Japan and the Himalayas. Leaves 1 to 2½ inches long, ovate, deep green above, glaucous beneath. Flowers 2 inches across, borne in a cyme at the end of the shoot; petals bright golden yellow, overlapping, roundish; sepals broadly ovate, one-third inch long. Stamens in 5 bundles. Introduced to Kew from Japan by Oldham in 1862; a native also of China and the Himalayas. It is not absolutely hardy in England (at Kew) and almost always has its stems cut back to ground level during the winter. These spring up again the following season from 1 to 2 feet high and flower from July to October. After a few years the shoots are apt to become more and more weakly and it becomes necessary to renew the stock from cuttings. The only species with which it can be confounded are *H. hookerianum*, from which it differs in the branchlets being 2-edged, especially just beneath the flowers; *H. lysimachioides*, which has narrow, linear-lanceolate sepals; and *H. uralum*, with flowers half the size. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 639.*)

39645. Laurocerasus acuminata (Wall.) Roemer. Amygdalaceæ.
(*Prunus acuminata* Hook. f.)

See S. P. I. No. 39121 for previous introduction.

39646. Leucosceptrum canum J. E. Smith. Menthaceæ.

"A tree 30 feet tall with short trunk, found in the temperate Himalayas from Kumaon to Bhutan at altitudes between 2,000 and 8,000 feet. Also in the Khasi Hills between 4,000 and 5,000 feet. The branches are very stout, nearly terete, densely or laxly tomentose or woolly, rarely glabrate. The elliptic-lanceolate, acuminate leaves are 6 to 12 inches long, glabrous above, silvery white, with buff or brown tomentum beneath, mostly variable in thickness, rarely green and glabrate. The corolla is of a whitish or pinkish color." (*Hooker, Flora of British India.*)

39647. Lindenbergia hookeri C. B. Clarke. Scrophulariaceæ.

39648. Lobelia rosea Wallich. Campanulaceæ.

"A species occurring in the subtropical Himalayas from Kumaon to Bhutan and the Khasi Hills at altitudes of 4,000 feet. It is also abundant in the Terai of North Bengal and Assam. The stem is 4 to 12 feet high, suberect with short horizontal branches with drooping tips. The leaves are rather long, about 6 inches, narrow at both ends and about 1 inch wide in the middle. The corolla is three-fourths inch wide and of a rose or white color. The fruit is subglobose in form and one-third inch in diameter. The seeds are ellipsoid in shape, compressed, and not margined." (*Hooker, Flora of British India.*)

39649. Memecylon edule Roxb. Melastomaceæ. **Ironwood.**

"An exceedingly common shrub met with in the east and south of India and in Ceylon, Tenasserim, and the Andaman Islands. The leaves

39636 to 39660—Continued.

are employed in South India for dyeing a 'delicate yellow lake.' In conjunction with myrobolans and sappan wood they produce a deep red tinge much used for dyeing grass mats and cloth. The leaves are thought by the natives to be cooling and astringent, but though occasionally given internally they are chiefly employed as a lotion in conjunctivitis. The plant flowers in the beginning of hot weather and produces astringent, pulpy berries which when ripe are eaten by the natives. The wood is hard, close grained, durable, and valuable for many purposes, but very difficult to work. The shrub is very handsome when covered with its dense bloom of blue flowers, and well worth cultivating as an ornamental plant." (*Watt, Dictionary of the Economic Products of India.*)

39650. MORUS LAEVIGATA Wallich. Moraceæ. **Mulberry.**

"A medium-sized tree, wild and cultivated in the tropical and subtropical Himalayas from the Indus to Assam up to 4,000 feet. The flowers appear in the cold weather and the long cylindrical yellowish white or pale-purple fruit ripens from March to May and is eaten by some, though insipidly sweet and of little value. The wood is yellow, with darker streaks of various colors, and is used for boat oars and furniture." (*Watt, Dictionary of the Economic Products of India.*)

39651. OSBECKIA STELLATA Don. Melastomaceæ.

See S. P. I. No. 39126 for previous introduction and description.

39652. PANDANUS FURCATUS Roxb. Pandanaceæ.

"A palmlike tree of northern and eastern Bengal, western India, and Burma. The leaves are used in Burma for making mats, and according to some authorities the leaves of this species are sewn together to make sails for boats. The outer wood is moderately hard, containing satiny, vascular bundles; inner wood soft and spongy; used in Burma for making floats for fishing nets." (*Watt, Dictionary of the Economic Products of India.*)

39653. PHLOGACANTHUS THYRSIFLORUS (Roxb.) Nees. Acanthaceæ.

"A large evergreen shrub found in the sub-Himalayan tract from Kumaon to Assam, the Khasi Hills, and Burma. It is very handsome, with long spikes of flame-colored flowers. The wood is white, moderately hard, and close grained. Often cultivated." (*Watt, Dictionary of the Economic Products of India.*)

39654. PHOENIX OUSELEYANA Griffith. Phœnicaceæ. **Palm.**

See S. P. I. No. 21753 for previous introduction.

39655. RANDIA ULIGINOSA (Retz.) Poir. Rubiaceæ.

"A small deciduous tree of eastern, central, and southern India, but not commonly found in the more northern parts of the Peninsula. The fruit is used in dyeing as a color intensifier and also in medicine as a remedy for diarrhea and dysentery. The fruit when boiled or roasted is eaten by the natives as a vegetable, either alone or in curries. The leaves are boiled and eaten as greens and also serve as fodder for cattle. The wood is whitish gray, closely grained, and hard, but not used for any special purpose. The unripe fruits are used as a fish poison." (*Watt, Dictionary of the Economic Products of India.*)

39636 to 39660—Continued.

39656. Rubia cordifolia L. Rubiaceæ. **Indian madder.**

An herbaceous creeper with perennial roots which is met with in the hilly districts of India from the northwest Himalayas eastward and southward to Ceylon. The *Manjit root* or *East Indian madder* is obtained for the most part from this species and is much employed by the natives of India for dyeing coarse cotton fabric or the threads from which it is woven various shades of scarlet, coffee brown, or mauve. The East Indian madder of commerce consists of a short stalk, from which numerous cylindrical roots about the size of a quill diverge. These are covered with a thin brownish pulp, which peels off in flakes, disclosing a red-brown bark marked by longitudinal furrows. Many different methods are used for dyeing with this madder, a short account of which may be found in Watt, Dictionary of the Economic Products of India.

39657. Rubus calycinus Wallich. Rosaceæ.

"A species native to the eastern and central temperate Himalayas and found in Sikkim as high as 9,000 feet above the sea and in Bhutan as high as 8,500 feet. This slender prickled species has a creeping stem which sometimes reaches 3 feet. The leaves are 1 to 3 inches in diameter and sometimes hairy beneath. The solitary or twin flowers are 1 inch in diameter and borne on erect 1 to 2 leaved shoots. This is very near a Philippine Island species, which has smaller flowers." (*Hooker, Flora of British India.*)

39658. Rubus rosaefolius Smith. Rosaceæ.

"A small shrub found in the temperate Himalayas from Kumaon to Sikkim at altitudes between 5,000 and 7,000 feet. It occurs also in the Khasi Hills and on the Hills of Ava and Martaban, and is distributed to Java. It is naturalized and cultivated in the Tropics and warm temperate regions, and in cultivation often has double flowers. The fruit is large, red, edible, and is frequently sold in Darjiling markets." (*Watt, Dictionary of the Economic Products of India.*)

39659. Senecio scandens Hamilton. Asteraceæ.

See S. P. I. No. 39080 for previous introduction.

39660. Solanum verbascifolium L. Solanaceæ.

"A shrub or small tree frequently met with throughout India in the tropical and subtropical regions and distributed to southeastern Asia, Malay, North Australia, and the tropical Americas. Used medicinally by the natives, but its properties are unimportant. In southern India it is cultivated for its fruit, which is eaten in curries. The wood is light yellow in color and of soft texture." (*Watt, Dictionary of the Economic Products of India.*)

39661. Commelina sikkimensis C. B. Clarke. Commelinaceæ.

From Sibpur, near Calcutta, India. Presented by the superintendent, Royal Botanic Garden. Received December 30, 1914.

A species occurring in the Himalayas from Sikkim to Assam at altitudes ranging from 2,000 to 4,000 feet.

39662 to 39664.

From Darjiling, India. Presented by Mr. G. H. Cave, Lloyd Botanic Garden. Received December 15, 1914.

39662. Toona ciliata Roemer. Meliaceæ. **Toon tree.**
(*Cedrela toona* Roxb.)

See S. P. I. Nos. 22076, 31250, and 32826 for previous introductions and description.

"A very handsome tree on account of its long, feathery, graceful leaves, which when young are of a crimson tint. It grows to a height of 40 to 50 feet and yields fine timber, which is of commercial importance." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

" The timber is durable, not eaten by white ants, and not liable to warp. It is therefore much in demand for furniture and carvings, especially in Seharunpur, and in Bengal and Assam is constantly used for tea boxes, hence its having become scarce. . . . The bark is used, along with a powder of the nuts (seeds) of *Caesalpinia bonducella*, as a tonic and antiperiodic in native medicine. The flowers afford a red and yellow dye. The seeds, young shoots, and leaves are given as a fodder to cattle." (*Watt, Commercial Products of India.*)

39663. Trachycarpus martiana (Wall.) Wendl. Phœnicaceæ. **Palm.**

See S. P. I. No. 38739 for previous introduction and description.

39664. Tetrastigma bracteolatum (Wall.) Planchon. Vitaceæ.
(*Vitis bracteolata* Wall.)

"A species with smooth stems and numerous minute flowers, found in Bhutan and Assam. The stems and the trifoliate leaves are glabrous and the branches are very slender, with leaves 3 to 5 inches long. The fruit is 2 to 3 seeded, of the size of a pea, round in form and black in color. The flowers of this species are by far the smallest of the genus." (*Hooker, Flora of British India.*)

39665 to 39674.

From Sibpur, near Calcutta, India. Presented by the superintendent, Royal Botanic Garden. Received December 30, 1914.

39665. Curculigo recurvata Dryander. Amaryllidaceæ.

"A stemless tuberous-rooted herb 2½ or more feet high, native of tropical Asia and Australia. The leaves are formed from the roots, and are also the drooping yellow flowers which appear almost on the ground. It is used by florists for vases, jardinieres, and all other general decorative work. To be at its best it should be planted in a bed where it will attain a height of 5 feet. When planted in this manner it is a very desirable summer ornamental. The graceful arching leaves are so constructed that they move from side to side with the slightest movement of the air. This species is propagated by division and the pieces if placed in sand in a warm greenhouse will root readily before potting." (*Bailey, Standard Cyclopedia of Horticulture.*)

39666. Ficus hookeri Miquel. Moraceæ.

See S. P. I. Nos. 39114 and 39643 for previous introductions and descriptions.

39667 and 39668. Ilex spp. Aquifoliaceæ. **Holly.**

39667. Ilex fragilis Hook. f.

A small tree with very brittle, quite glabrous branches which is found in the Sikkim and Bhutan Himalayas at altitudes of 7,000

39665 to 39674—Continued.

to 10,000 feet and in the Khasi Mountains at Surureem as high as 5,000 feet. The leaves are of a bright deep-green color and more membranous than any of the other Indian species. They are very strongly reticulate, with many raised nerves beneath the petiole, one-half to two-thirds inch long. The flowers are one-eighth inch in diameter and fascicled. The fruit, which is borne on short, stout pedicels, is one-sixth inch in diameter, fleshy, red, globose; stigma rather large and tumid; stones thickly coriaceous. (Adapted from *Hooker, Flora of British India.*)

39668. Ilex intricata Hook. f.

A low, rigid, straggling shrub, forming matted masses with interlaced woody branches, found in the Sikkim and East Nepal Himalayas as high as 11,000 feet above the sea. The branchlets are stout, angled, and rigid; the ridges warted. The leaves are spreading, thickly coriaceous, of a bright green color, and narrowed into very short petioles. The flowers are one-tenth inch in diameter, and the sessile fruit is globose in form and red in color. (Adapted from *Hooker, Flora of British India.*)

39669. Impatiens longipes Hook. f. and Thoms. Impatientaceæ.

A very distinct plant 4 to 5 feet in height found in the temperate Sikkim Himalayas from 8,000 to 10,000 feet above the level of the sea. This species has scattered uniform leaves and long, axillary, subhorizontal peduncles 2 to 5 inches long. Leaves 3 to 5 inches, membranous, rather falcate; petiole one-fourth to one-half inch. Flowers loosely racemed, pale yellow, unspotted; buds rounded at the apex, sepals sometimes four, ovate lanceolate; lateral winged lobe rounded, terminal 1 inch, broadly subulate. Hooker states that he has not seen any other habitat for this species but Sikkim. In the form of flower it is most allied to *Impatiens laxifolia* and its allies. (Adapted from *Hooker, Flora of British India.*)

39670. Piptanthus nepalensis (Hook.) Sweet. Fabaceæ.

See S. P. I. Nos. 39043 and 39128 for previous introductions and description.

39671. Sambucus javanica Reinw. Caprifoliaceæ.

"This is a very widely distributed species ranging from the Malayan Archipelago to central Japan and western China and has also been found in eastern Africa. It is characterized by the slender-pedicelled flowers, the presence of conspicuous abortive flowers, and the very wide and loose inflorescence with the longer rays subthyrsoid. It has red fruits and shows a tendency to have the upper leaflets more or less adnate to the rhachis and sometimes decurrent." (*Sargent, Plantae Wilsonianae, part 2, p. 307.*)

39672 and 39673. Solanum spp. Solanaceæ.

39672. Solanum sp.

39673. Solanum torvum Swartz.

See S. P. I. Nos. 3915, 24651, and 30895 for previous introductions.

39674. Stephania rotunda Lour. Menispermaceæ.

See S. P. I. No. 39084 for previous introduction.

39675. Stizolobium sp. Fabaceæ.

From Darjiling, India. Presented by Mr. G. H. Cave, Lloyd Botanic Garden. Received December 31, 1914.

39676 to 39681.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received December 10, 1914. Seeds of Chinese plants sent to the Arboretum by Mr. Maurice L. de Vilmorin.

39676. Crataegus sp. Malaceæ. Hawthorn.

No. 7380.

39677. Meibomia sp. Fabaceæ.

No. 7389.

39678 and 39679. Rhus sp. Anacardiaceæ.

39678. No. 7379.

39679. No. 7385.

39680. Thuja sp. Pinaceæ. Arbor vitæ.

No. 7378.

39681. Leptodermis oblonga Bunge. Rubiaceæ.

No. 7392.

A shrub or bush, about 3 feet in height, with white, pink, or purplish flowers. It is native of central and western China, where it ascends to 3,000 meters (10,000 feet), growing in rocky places. (Adapted from *C. S. Sargent, Plantae Wilsonianae, vol. 3, part 2, p. 403, 404, 1916.*)

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BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

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OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1915.

(No. 42; Nos. 39682 TO 40388.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1915 (NO. 42; NOS. 39682 TO 40388).

INTRODUCTORY STATEMENT.

Owing to the disturbed condition of ocean traffic and the uncertainty of getting perishable plant material in, no expeditions were undertaken except that into the Province of Kansu, China, which had been planned for two years. Nevertheless, an unusual number of interesting and important plants are described in this number of the inventory. Mr. Frank N. Meyer, who made the Kansu expedition, although hampered by the difficulty of getting good interpreters who were willing to accompany him to the borders of Tibet, succeeded in getting as far as the capital of Kansu Province, but was obliged to retrace his steps from that point.

He discovered a number of very interesting plants, however, among which perhaps the most important will be found to be some large-fruited wild freestone peaches, *Amygdalus* spp. (No. 40001 to 40006); the Tangutian bush almond, *Amygdalus tangutica* (Nos. 39898, 40010, and 40011), a species very resistant to drought and cold; a wild pear, *Pyrus ussuriensis* (No. 40019), of the melting, juicy type, quite distinct from the characteristic hard, gritty ones of China; a wild species of grape, *Vitis* sp. (No. 40026), with small bunches of black edible berries; wild hardy apricots, *Prunus armeniaca* (Nos. 40012 and 40013), which may enable breeders to extend the area of successful apricot culture farther northward; a very hardy dwarf crab apple, *Malus* sp. (No. 39923), from an altitude of 9,000 feet in Kansu; a wild gooseberry, *Ribes alpestre giganteum* (No. 39916), growing 15 feet tall, found on dry embankments, a promising hedge plant for the cold semiarid sections of the United States; a very vigorous-growing currant, *Ribes* sp. (No. 39910), from 7,000 feet altitude, which makes a bush 25 feet tall; a wild cherry, *Prunus setulosa* (No. 39911), which has possibilities as a stock plant; Potanin's peach, *Amygdalus persica potanini* (Nos. 40007 to 40009), a bushy form resembling otherwise *A. davidiana*, which has been so successful as a stock, but which, according to Mr. Meyer, is likely to prove even more drought resistant than the latter species and be useful as a stock in the dry regions of this country; two wild plums, *Prunus* spp. (Nos. 40014 and 40015), with possibilities for breeding purposes, from Shensi Province; and a citrus species (Nos. 39897 and 40039), with fruits resembling those of a sour mandarin, which would appear to have unusual hardiness.

Of shade trees and shrubs for dooryards, Mr. Meyer secured a poplar, *Populus suaveolens przewalskii* (No. 39900); a beautiful evergreen bush, *Daphne tangutica* (No. 39914), suited to regions like Long Island; a bush honeysuckle, *Lonicera* sp. (No. 39915), for low hedges in the colder sections of the country; a Chinese rowan, *Sorbus* sp. (No. 40021); an ideal cover for shady portions of the dooryard, *Schizandra sphenanthera* (No. 40025); a valuable late-flowering porch climber with white flowers, *Polygonum* sp. (No. 40034); and Wilson's horse-chestnut, *Aesculus wilsonii* (No. 40037), from near Chenghsien, Kansu, a new form of this valuable avenue tree.

Of the introductions made through correspondents the following are the most noteworthy:

Four varieties of corn, *Zea mays* (Nos. 39936 to 39939), were collected by Mr. F. Kingdon Ward in the Valley of Nmaihka in Upper Burma, where a remarkable corn culture exists at an altitude of 5,000 to 6,000 feet, which appears to be very ancient. On one of these varieties (No. 39937) Mr. Collins has found signs of the characteristic waxy endosperm which has heretofore appeared only on corns from eastern China and nowhere else in the world, and this fact may be of value in determining the origin of this remarkable corn. A surprisingly interesting collection of Spanish corn varieties, *Zea mays* (Nos. 40259 to 40294), from Spain and the Canary Islands and different portions of the mainland, which was made by Señor Valero, an official agricultural engineer who recently visited this country, has already unusually excited the interest of the corn specialists.

So much interest attaches to the spineless cactus that the discovery in Hawaii of a form without spines and with very few spicules, *Opuntia* sp. (No. 39853), which is supposed to have been brought there by Don Marin and which in comparison with Burbank's spineless cactus has shown its ability to live on dry islands of the Hawaiian group where the Burbank cactus has quickly perished, will interest a wide circle of experimenters.

The Porto Rican black walnut, *Juglans portoricensis* (No. 40236), which matures its nuts in April and May; the red bush nut from New South Wales, *Hicksbeachia pinnatifolia* (No. 39871); the late-blooming varieties of English walnut, *Juglans regia* (Nos. 39839 to 39844 and 39881 to 39886), from Grenoble, France, to which our attention was directed by Prof. J. Russell Smith; the Tibetan tree hazelnut, *Corylus* *chinensis* (No. 39907), which grows to 100 feet in height and of which Mr. Meyer has secured seeds in China; the wild small-fruited but probably very hardy walnuts from Kansu, *Juglans regia* (No. 40016); and a new form of the comparatively disease-resistant Chinese chestnut with slender trunk, *Castanea* sp. (Nos. 40035 and 40036), will be of particular interest to nut specialists.

Extensive introductions of sweet-potato varieties have been made through Mr. Roig from the experiment station at Santiago de las Vegas, where many trials have been conducted with this vegetable, *Ipomoea batatas* (Nos. 39729 to 39735, 39741 and 39742, 39799 to 39802, 39831 to 39833, 39941 to 39945, 40237 to 40258, and 40388).

A Japanese gentleman visiting this country, Mr. Kuwashima, has directed attention to the fact that one of the highest priced vegetables in Japan is the Mitsuba or Mitsuba-jeri, *Deringa canadensis* (No. 39869), a native of this country as well. The young leaves are eaten boiled and the roots are fried.

Dr. Trabut has sent in a wild pear, *Pyrus mamorensis* (Nos. 40297 and 40331), from the Moroccan forests of Mamora, which is resistant to drought and thrives in sandy noncalcareous soils.

Thirteen varieties of plum, *Prunus bokhariensis* (Nos. 40223 to 40235), adapted to the warm South, from Seharunpur, India, have been sent in by Mr. Hartless. They begin fruiting in May and bear for two months.

His Majesty the Ameer of Afghanistan sent through his special envoy, Mr. Jewett, a remarkable collection of dried fruits and seeds representing varieties of tree and field crops which are grown in his country. The most interesting of these were the samples of dried white mulberry, *Morus alba* (No. 40215), which in Afghanistan is considered a very important article of food and proved upon analysis to have the food value of dried figs. As Kabul has a cold winter climate and is subjected to intense summer heat, the cultivation of a sweet, drying variety of mulberry may be worth considering for the Great Plains of this country. Those sent by the Ameer were extremely palatable.

The best market apple of southern Italy and Sicily is the Limoncella (No. 39829). Dr. Gustav Eisen, who sent in bud wood of it, considers it superior to any variety now grown in southern California, where it is likely to succeed best.

Of strictly southern or subtropical introductions, the following are worth mentioning: The black sapote from the Isle of Pines, *Diospyros ebenaster* (No. 39719); the famous durian of Java, *Durio zibethinus* (No. 39709), noted at the same time for its delicious flavor and offensive odor; a rare species of anona, *Annona scleroderma* (No. 40305), from Guatemala, of richer flavor than the soursop; the Harrar fig from Abyssinia, *Ficus* sp. (No. 39828), which can stand heavy summer rains and may thrive in Texas; the sycamore fig, *Ficus sycomorus* (Nos. 39827, 39857, and 39858), which is at the same time a shade tree and a fruit tree of minor importance, interesting because of the ancient methods practiced to liberate the fig insects from the fruit; and the bushukan or finger citron of Japan, *Citrus medica sarcodactylis* (No. 39940), a curious dwarf potted plant grown for its fragrant flowers and the perfume of its fruits.

Of shade trees, park shrubs, and plants for the dooryards of the city, as well as country homes, there are an unusual number in this inventory. They include the best of the Egyptian tamarisks, *Tamarix aphylla* (No. 39856), remarkably successful as a timber tree on reclaimed desert lands where the irrigation water is quite saline, and three species of tamarisks from the Caucasus, *Tamarix hohenackeri* (No. 39691), *Tamarix pentandra* (No. 39692), and *Tamarix* sp. (No. 39693); the giant-fruited oak of Zacuapam, Mexico, *Quercus insignis* (No. 39723), with acorns 2½ inches across; two remarkably fragrant flowered species of Pittosporum from the Riviera, where they have been found successful, *P. floribundum* and *P. macrophyllum* (Nos. 39727 and 39728); the Guadeloupe Island palm, *Erythea edulis* (No. 39740), suggested as possibly hardy in the South Atlantic coast region; a collection of correctly named varieties of Japanese flowering cherries, *Prunus serrulata* (Nos. 39743 to 39798 and 39820 to 39826), presented by the municipality of Tokyo and taken from the cherry-tree arboretum maintained by this municipality itself by Mr. E. H. Wilson, of the Arnold Arboretum; a collection of cotoneasters, *Cotoneaster* spp. (Nos. 40162 to 40175), many of which have proved especially adapted to dooryard use; a collection of barberries, *Berberis* spp. (Nos. 40139 to 40153), from the Kew Gardens, to test in comparison with Thunberg's barberry, which has become one of the most popular of spiny dooryard ornamentals; the large wild cherry tree of Japan, *Prunus serrulata sachalinensis* (No. 40190), a long-lived timber tree, which grows to be 80 feet tall and centuries old and has not yet been used as a stock by the Japanese, though probably the hardiest of all Japanese species and superbly beautiful with its masses of pink blooms; a new linden, probably a hybrid, *Tilia euchlora* (No. 40197), which, because of its large bright-green leaves and their freedom from insects, is being planted as a street tree on the Continent; a new species of flowering quince, *Chaenomeles japonica* (No. 40161), most charming of the red-flowered shrubs, the fruits of which make excellent preserves, and its relative, the large-fruited Chinese quince, *Chaenomeles lagenaria cathayensis* (No. 40160), the large ornamental fruits of which are used for perfume purposes; and two new roses for the rose breeders, one from the Himalayas, *Rosa webbiana* (No. 40191), and the other from central China, with delicate purplish rose blooms, *Rosa sertata* (No. 40193).

Through the courtesy of Prof. Sargent, of the Arnold Arboretum, seeds have been received of a number of the rare shade, park, timber, and ornamental trees from foreign countries which have proved hardy at Jamaica Plain, Mass., and are worthy of a wider trial in the Northern States (Nos. 39983 to 39998).

Chinese names in this inventory have been brought, so far as possible, into accord with the best authorities, the geographic names (except when fixed by decisions of the United States Geographic Board) being given in the form accepted by the Chinese Ministry of Communications Postal Guide. Many of the village names, however, are not listed therein, and in all such cases the location of the village is given with reference to the nearest town mentioned in that valuable reference work.

The manuscript of this inventory has been prepared by Miss May Riley, the botanical determinations of seeds introduced have been made and the notes on geographic distribution compiled by Mr. H. C. Skeels, and the descriptive and botanical notes arranged by Mr. S. C. Stuntz, who has also had general supervision of this inventory.

David Fairchild,
Agricultural Explorer in Charge.

Office of Foreign Seed and Plant Introduction,
Washington, D. C., December 20, 1916.

INVENTORY.

39682 to 39690.

From Sibpur, near Calcutta, India. Presented by Mr. C. C. Calder, Royal Botanic Garden. Received January 11, 1915.

"Collected on the eastern Himalayas." (*Calder.*)

39682. CREPIS JAPONICA (L.) Bentham. Cichoriaceæ.

A common eastern Asiatic herb.

39683. POGOSTEMON FRATERNUS Miquel. Menthaceæ.

Distribution.—An herbaceous perennial related to patchouli and belonging to the mint family, found at an altitude of 3,000 to 5,000 feet in the Sikkim Himalayas in India and in Java.

39684. BLUMEA MYRIOCEPHALA DC. Asteraceæ.

Distribution.—A composite shrub with leaves 6 to 10 inches long and small heads of flowers in a pyramidal panicle; found in the Sikkim Himalayas in India.

39685. MARSDENIA TENACISSIMA (Roxb.) Wight and Arnott. Asclepiadaceæ.

A climbing plant distributed throughout the lower Himalayas, ascending to 5,000 feet, from Kumaon to Assam and Burma. The plant is fond of dry, barren localities, twining on the bushes and small trees. The bark of the stems yields a large quantity of beautiful fine silky fiber, which is extracted by cutting the stems into sections and then scraping them clean with the finger nails or with a stick. The mountaineers of Rajmahal make their bowstrings from this fiber, because of its strength and durability. In Dr. Roxburgh's tests of twine made from this fiber, he found that in the dry and wet states it bore a strain of 248 and 343 pounds, when hemp in the same state bore 158 and 190 pounds. More recent tests, however, place it below hemp in strength, but above it in elasticity. The fiber is much used in making fishing nets, and is not liable to injury by submersion in water. One of the chief characteristics of this fiber is its elasticity, and it is considered to be the second best fiber in India. This species, though producing a good fiber, is not in general cultivation, being a climber; difficulties exist with which the Indian cultivator has not yet attempted to deal. A milky juice exudes from the cuts on the stems which thickens into an elastic substance, which acts in the same way as India rubber in removing black-lead marks. (Adapted from *Watt, Dictionary of the Economic Products of India,* and *C. R. Dodge, Useful Fiber Plants of the World.*)

39686. CARYOPTERIS PANICULATA C. B. Clarke. Verbenaceæ.

"A spreading shrub, from Upper Burma; branches terete, slender, pubescent. Leaves mostly obtuse or rounded at the base. Panicles axillary, subsessile one-half to 2½ inches, distinctly panicled, rachis dis-

39682 to 39690—Continued.

tinct, often 20 to 60 flowered. Corolla pubescent, deep red." (*Hooker, Flora of British India, vol. 4, p. 597.*)

Of similar value perhaps to *C. mastacanthus.*

39687. HOYA GLOBULOSA Hook. f. Asclepiadaceæ.

Distribution.—A stout, handsome, asclepiadaceous climber with orbicular leaves and umbels of cream-colored flowers, found up to an altitude of 3,000 feet in the Himalayas of Sikkim and Assam, in India, and succeeding under the same treatment as *H. carnosa.*

39688. TRIUMFETTA PILOSA Roth. Tiliaceæ. **Burweed.**

An herbaceous hairy or bristly tropical weed with yellow flowers in dense cymes.

39689. ERIANTHUS RUFIPILUS (Steud.) Griseb. Poaceæ.
(*Erianthus fulvus* Nees.)

"A perennial grass found in the temperate Himalayas at altitudes of 5,000 to 7,000 feet. Stems 6 to 8 feet high, silky hairy just above the panicle. The leaves are 2 to 3 feet long and one-fourth inch to 1 inch wide, slightly rough and with the margins of the sheath hairy. Panicle 8 to 18 inches, grey white or tinged with purple. Spikelets about one-tenth inch long with the basal hairs 3 to 4 times as long as the spikelets." (*Collett, Flora Simlensis.*)

Introduced for the work of the Office of Forage-Crop Investigations.

39690. NEYRAUDIA MADAGASCARIENSIS (Kunth) Hook. f. Poaceæ.

"A species found on the plains of north India, ascending to 5,000 feet, throughout tropical Asia and Africa and Madagascar. A perennial grass with leafy, solid stem 6 to 10 feet high. The leaves are flat, 1 or 2 feet long and up to 1 inch wide, with base clasping the stem. Ligule very short and hairy. Spikelets purple-brown, narrow, slightly flattened, one-fourth to one-third inch long, 4 to 8 flowered (flowers all fertile except sometimes the uppermost), in a shining, silky erect panicle 1 to 3 feet long. The branches are in half whorls and more or less spreading." (*Collett, Flora Simlensis.*)

39691 to 39693. TAMARIX spp. Tamaricaceæ. **Tamarisk.**

From Caucasus, Russia. Presented by the Tiflis Botanic Garden. Received January 7, 1915.

39691. TAMARIX HOHENACKERI Bunge.

39692. TAMARIX PENTANDRA Pallas.

"This shrub or small tree is one of the most decorative tamarisks in cultivation, flowering in great profusion in July and August. In the wild state it ranges from the Balkan Peninsula through southern Russia to Turkestan, and from Asia Minor to Persia, adorning the banks of rivers, particularly in their lower reaches and estuaries. Like other species of this genus, it thrives well in saline soils, but is by no means dependent on a more than ordinary amount of salts in the ground. The flowers are usually rose-colored, but sometimes white or nearly so." (*Botanical Magazine, pl. 8138.*)

39693. TAMARIX sp.

39694 to 39697.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 7, 1915.

39694. SOLANUM DULCAMARA L. Solanaceæ.

A vine of the nightshade sort.

39695. ZANTHOXYLUM BUNGEI Planchon. Rutaceæ.

Hua chia.

39696. CLEMATIS sp. Ranunculaceæ. **Clematis.**

Purple mountain clematis.

39697. LONICERA sp. Caprifoliaceæ.

Red-berried shrub; flowers like woodbine.

39698. DIOSPYROS EBENASTER Retz. Diospyraceæ. **Black sapote.**

From Santa Fe, Isle of Pines. Presented by Mr. H. S. Jones. Cuttings received January 18, 1915.

See S. P. I. No. 39719 for description.

39699 and 39700. CITRUS spp. Rutaceæ.

From Catania, Italy. Presented by Mr. Joseph E. Haven, American consul. Received January 16, 1915.

39699. CITRUS BERGAMIA Risso. **Bergamot orange.**

39700. CITRUS AURANTIUM L. **Bitter orange.**

"To the bitter orange plant is grafted the bud wood of the Bergamot orange, as Bergamot oranges do not grow from a Bergamot seed." (*Haven.*)

39701. OPHIOPOGON JAPONICUS (L.) Ker. Liliaceæ.

Grown at the Plant Introduction Field Station, Rockville, Md.

"A small evergreen plant, with grasslike leaves, growing to a height of 3 to 6 inches and bearing racemes of small white flowers followed by pale-blue berries. Much used in Italy as a ground cover in the shade of trees where grass will not grow." (*Peter Bisset.*)

39702 to 39705. DIOSCOREA spp. Dioscoreaceæ. **Yam.**

From Guam. Presented by the Experimental Station of Guam, through Mr. W. E. Safford, of the Bureau of Plant Industry. Received January 13, 1915.

For a general discussion of the yams of Guam, see W. E. Safford, Useful Plants of Guam, pages 257 to 263, 1905.

39702. *Nika.*

39703. *Nika cimarron.*

39704. *Dago agaga.* (Red yam.)

39705. *Dago hava.* (Southern yam.)

39706. RHUS sp. Anacardiaceæ.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 7, 1915.

Cha lu kou.

39707. Aleurites fordii Hemsl. Euphorbiaceæ. **Tung tree.**

From Foley, Ala. Purchased from Mr. J. L. Sebastian. Received January 9, 1915.

Seed from S. P. I. No. 21013, sent him in February, 1908.

39708. Vanilla sp. Orchidaceæ. **Vanilla.**

From Tampico, Mexico. Presented by Mr. Thomas H. Bevan. Cutting received January 12, 1915.

39709. Durio zibethinus Murr. Bombacaceæ. **Durian.**

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received January 11, 1915.

See S. P. I. Nos. 28082, 34072, and 37103 for previous introductions.

"A very large, handsome, pyramid-shaped tree, native of the Malayan Archipelago and commonly cultivated in the Straits, Burma, Java, etc., for the sake of its celebrated fruit. The latter is produced on the older branches, varies somewhat from round to oval in shape, and usually weighs from 5 to 7 pounds or more. It is armed with thickly set, formidable prickles about one-half inch long; when ripe it becomes slightly yellow and possesses an odor which is intensely offensive to most people, especially on first acquaintance with it. The cream-colored pulp surrounding the seed is the edible portion; this is most highly prized by the Malays and other oriental people, and is also relished by Europeans who acquire a taste for it. Firminger describes it as 'resembling blancmange, delicious as the finest cream,' while Mr. Russel Wallace considered that 'eating durians is a sensation worth a voyage to the East.' The large seeds may be roasted and eaten like chestnuts. Pounded into flour they are said to be sometimes made into a substance like 'vegetable ivory.' The durian tree thrives in the moist low country of Ceylon up to 2,000 feet elevation and luxuriates in deep alluvial or loamy soil. In Peradeniya Gardens there are magnificent specimens well over 100 feet in height. They usually flower in March or April, and the fruit is ripe in July or August. Durian fruits are variable in size, shape, flavour, and quantity of pulp, according to variety. The trees also vary in productiveness, some varieties being almost barren. Selection and high cultivation should therefore be practiced in order to obtain the best fruits. The tree is readily propagated by seed if sown fresh; the seed is of short vitality and germinates in 7 to 8 days." (*Macmillan, Handbook of Tropical Gardening and Planting, p. 142.*)

39710. Quercus suber L. Fagaceæ. **Cork oak.**

From Gibraltar, Spain. Procured through Mr. Richard L. Sprague, American consul. Received January 4, 1915.

"Spanish cork oak acorns gathered in the cork woods near Alpandiere and Gaucin station, Province of Malaga, 45 miles north of Gibraltar. These acorns are of fine quality." (*Sprague.*)

See S. P. I. No. 36925 for previous introduction.

39711. Chenopodium bonus-henricus L. Chenopodiaceæ. **Good King Henry.**

From Lincoln, Lincolnshire, England. Purchased from Pennell & Sons. Received January 2, 1915.

For experimental use as greens; not for distribution.

39712. Citrus bergamia Risso. Rutaceæ. Bergamot orange.

From Naples, Italy. Presented by Mr. Jay White, American consul. Received January 5, 1915.

"A small tree; leaves oblong oval, with long, winged petioles; flowers small, white, very fragrant; fruits pyriform, 3 to 4 inches in diameter, thin skinned, pale yellow when ripe; pulp acid; seeds oblong, many. Extensively cultivated in Calabria for the essential oil which is expressed from the peel and used in making eau de Cologne and other perfumes. (*Swingle. In Bailey, Standard Cyclopedia of Horticulture.*)

39713. Castanopsis sp. Fagaceæ.

From Changning, Kiangsi, via Swatow, China. Presented by Rev. C. E. Bousfield, American Baptist Mission. Received January 5, 1915.

"While crossing some hills near here I came across some chestnut trees which are new to me. I think that, though smaller, the nuts have a better flavor than the common kind." (*Bousfield.*)

39714. Aleurites fordii Hemsl. Euphorbiaceæ. Tung tree.

From Fairhope, Ala. Presented by Mr. C. O. White. Received January 2, 1915.

Seeds from S. P. I. No. 21013 sent to Mr. White in 1908.

39715 and 39716.

From Calcutta, India. Presented by the Botanic Garden, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received January 4, 1915. Quoted notes by Mr. Piper.

39715. Holcus halepensis L. Poaceæ. Johnson grass.
(*Sorghum halepensis* Pers.)

"This Indian variety of Johnson grass differs in producing more abundant rootstocks and in having a larger, looser panicle with drooping branches."

39716. Andropogon annulatus Forsk. Poaceæ.

"An abundant grass in northern India often cut for hay."

Stems one-half to 3 feet long, branching, often half climbing, bent at the lower joints and then ascending; leaves mostly basal, 6 to 12 inches long, narrow, rigid, upper surface hairy. Spikelets in pairs on five to eight unequal spikes 1 to 2½ inches long and forming a digitate cluster at the top of the stem. (Adapted from *Collett, Flora Simlensis, p. 603.*)

39717 and 39718.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 2, 1915.

39717. Castanea sp. Fagaceæ. Chestnut.

Chestnuts from Anhwei.

39718. Solanum dulcamara L. Solanaceæ.

An ornamental vine with red berries.

39719. DIOSPYROS EBENASTER Retz. Diospyraceæ. **Black sapote.**

From Santa Fe, Isle of Pines. Presented by Mr. H. S. Jones. Received January 4, 1915.

"From fine ripe fruits from 2½ to 3 inches in diameter. The fruits are just beginning to ripen (December 28) and will last until about the middle of February." (*Jones.*)

"The *sapote prieto* or *sapote negro* (black sapote) of Mexico, an interesting fruit belonging to the persimmon family. The tree grows in compact, shapely form and is of very ornamental appearance with its oblong-oval, glossy leaves about 4 inches long. In appearance the fruits greatly resemble some varieties of the kaki or Japan persimmon; in place of being bright orange, however, they are light green when ripe, and measure 2½ to 3 or even 4 inches in diameter. In shape they are oblate or distinctly flattened and the persistent, light-green calyx is quite prominent.

"The interior of the fruit, when ripe, is anything but attractive in appearance, the flesh being dark brown or almost black in color, and of a greasy consistency. The flavor is sweet, but rather lacking in character; for this reason the Mexicans frequently serve the fruit cut up, or mashed up, with orange juice; it is a first-rate dish. The seeds look like those of the persimmon and are not very numerous.

"According to Mr. Jones, the fruit ripens in the Isle of Pines from the last part of December to the middle of February. The tree is rare outside of certain parts of Mexico, but has done well at Mr. Jones's place. It seems worthy of much wider dissemination throughout the Tropics. Types from the cooler parts of Mexico have withstood a little frost in southern California, yet the tree can not be considered very hardy." (*Wilson Popenoe.*)

For previous introductions, see S. P. I. Nos. 24600 and 39698.

39720. COCOS NUCIFERA L. Phœnicaceæ. **Coconut.**

From Panama. Secured by Mr. H. Pittier, of the Bureau of Plant Industry. Received January 4, 1915.

"This shipment may contain specimens of the *Burica, San Blas*, which the natives call *coco de cuchilla*, and possibly specimens of the *Montiosa* variety." (*Pittier.*)

39721. CASTANEA MOLLISSIMA Blume. Fagaceæ. **Chestnut.**

From Tientsin, China. Procured through Mr. Samuel S. Knabenshue, American consul general. Received May 14, 1914.

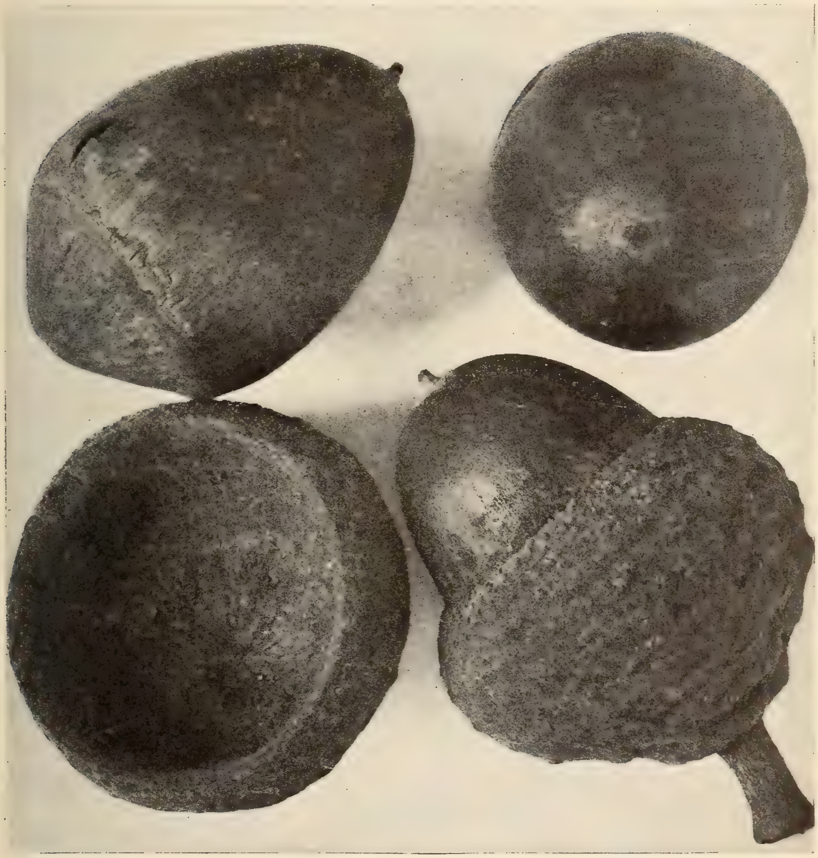
39722. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

From Budapest, Hungary. Presented by the American consul.

39723. QUERCUS INSIGNIS Martens and Galleotti. Fagaceæ. **Oak.**

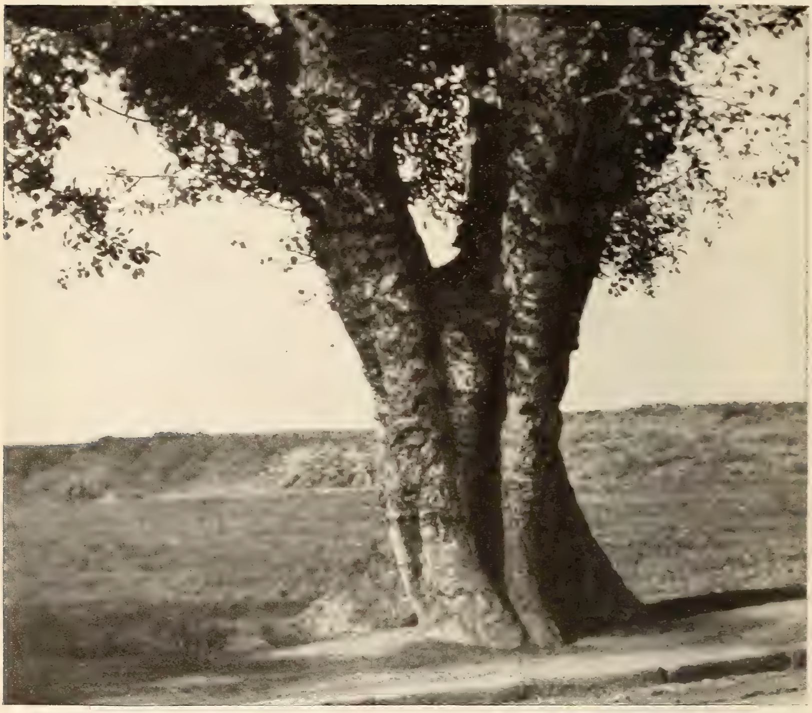
From Zacuapam, Vera Cruz, Mexico. Purchased from Dr. C. A. Purpus. Received January 7, 1915.

"These acorns were sent to me by a friend, Señor Guillermo Ziche, from Huatusco, and were collected in the Sierras west of town at about 1.500 to 1.600 feet altitude. I am sure you will be able to grow the oaks in the southern part of Florida, where the palms (*Roystonea* (*Oreodoxa*) *regia*) grow. They need a moist climate or subtropical forests to do well." (*Purpus.*)



GIANT ACORNS OF A MEXICAN OAK (QUERCUS INSIGNIS, S. P. I. No. 39723).

A white oak which occurs about midway down the flanks of Mount Orizaba, forming there trees 60 to 80 feet high branching 30 or 40 feet from the ground. Believed by Dr. C. A. Purpus capable of acclimatization in Florida, Porto Rico, and Hawaii. The acorns are edible. Photographed, natural size, by Mr. E. L. Crandall, Washington, D. C., March 14, 1914 (P13834FS).



THE SYCAMORE FIG (FICUS SYCOMORUS S. P. I. NOS. 39827, 39857, AND 39858).

From the wood of this "sycamore" of Scripture, the "Tree of Life" of the Egyptians, the ancient coffins were made. It is a true fig tree and was introduced into Egypt, probably from Yemen on the east coast of the Red Sea, in very early times. It bears figs of inferior quality which are inhabited by the fig insect (*Sycophaga crassipes*). These figs are not fit to eat unless their tips are cut off to let the fig insects escape. From the time of Pliny even the Egyptian boys have operated on these sycamore figs, using a kind of thimble made of iron plate ending in an iron "finger nail." The figs are borne on small leafless fleshy branches arising directly from the trunk, and it is the practice to beat the trunk of the tree with a hammer to increase its fruitfulness. The illustration shows the scars thus induced. Photographed by S. C. Mason (P20231CP).

"The tree is rapid in growth and quite different in habit from most oaks. It reaches an ultimate height of 60 to 80 feet or more, is quite erect, and sends out large branches at the height of 30 or 40 feet from the ground. It is found in considerable abundance about midway down the flanks of Mount Orizaba, being most common about Chiapas, according to Dr. C. A. Purpus, who has recently been collecting in that region. It is a white oak, maturing its fruit the first season, and, being a white oak, its fruit has sufficient edible quality to be available at least for stock food.

"The only other oaks that approximate it in size, according to Dr. William Trelease, of the University of Illinois, who called the attention of this association to the species, 'are a close relative, *Quercus strombocarpa*, of the same region, and a Guatemalan black oak, *Q. skinneri*, the latter apparently an equally large tree and with acorns 2 inches in diameter, but presumably bitter or astringent like our own black acorns.'

"The nuts of the *Quercus insignis* are usually about 2 inches in diameter, but may reach 2½ inches. Their weight is from 50 to 65 grams each. In view of its range, the tree is naturally to be supposed unsuited to a temperate climate, but Dr. Purpus writes, 'I think it a very useful tree, which could be raised in Florida, Cuba, Porto Rico, etc.' The Office of Foreign Seed and Plant Introduction of the United States Department of Agriculture is now endeavoring to introduce it to those regions on a large enough scale to give it a chance of success. If it is found to be well adapted, it is possible that native species of oaks could in some cases be grafted over with the productive new one, thus yielding a large crop of acorns with very little trouble or care. Hybridizing experiments should also be tried with some of the best North American oaks, with a view to seeing whether the size of their acorns can not be increased." (*The Journal of Heredity, vol. 5, p. 406, 1914.*)

For an illustration of the giant acorns of this Mexican oak, see Plate I.

39724 to 39726.

From Tientsin, China. Presented by Dr. Yamei Kin, Peiyang Woman's Medical School and Hospital. Received January 8, 1915. Quoted notes by Dr. Kin.

39724. BRASSICA PEKINENSIS (Lour.) Skeels. Brassicaceæ. **Pe-tsai.**

"Seed from Shantung of the fine, specially white *pai ts'ai*. It is grown in the same way as the Chihli *pai ts'ai*, but is larger, not so tall, and said to be of better keeping quality."

39725 and 39726. CUCUMIS MELO L. Cucurbitaceæ. **Muskmelon.**

"White melon that is very delicate in flavor and easily grown."

39725. Larger seeds. **39726.** Smaller seeds.

39727 and 39728. PITTOSPORUM spp. Pittosporaceæ.

From Nice, France. Presented by Dr. A. Robertson-Proschowsky, Jardin d'Acclimatation. Received January 6, 1915. Quoted notes by Dr. Proschowsky.

39727. PITTOSPORUM FLORIBUNDUM Wight and Arnott.

"This species has large leaves and is of comparatively rapid growth. It has numerous small flowers, which are very fragrant. It is one of the most floriferous species I possess, and is new to the Riviera."

For previous introductions, see S. P. I. Nos. 39044 and 39129.

39727 and 39728—Contd. (Quoted notes by Dr. A. Robertson-Proschowsky.)

39728. PITTOSPORUM MACROPHYLLUM Laut. and K. Sch.

"The plant has existed in my garden for more than twenty years. It is the most beautiful of the dozen or so *Pittosporum* species which I cultivate. The leaves occasionally attain nearly the size of those of *Magnolia grandiflora*, and the flowers are perhaps not surpassed in fragrance by any other flower. Indeed, the fragrance is most exquisite. Would not such highly fragrant flowers be of value for the extraction of perfume?"

For previous introduction, see S. P. I. No. 11644.

39729 to 39735. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. **Sweet potato.**

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas. Tubers received January 7, 1915. Quoted notes by Mr. Roig; yields stated in arrobas (of 25 pounds each) per caballería (33⅓ acres).

39729. "*Candela.* From Trinidad, Santa Clara. White inside; yielding 34,260 arrobas per caballería."

39730. "*Camarioca.* From Punta Brava, Havana. Yellow inside; yielding 26,834 arrobas per caballería."

39731. "*Pan con vino.* From Madruga, Havana. Red outside, striped with violet inside, very sweet; yielding 48,695 arrobas per caballería."

39732. "*Hache.* From Jiguani, Oriente. Pale yellow inside; yielding 36,521 arrobas per caballería."

39733. "*Camareto.* From Cienfuegos. Saffron colored inside; yielding 15,060 arrobas per caballería."

39734. "*Mongorro.* From Isle of Pines. Deep yellow inside; yielding 23,408 arrobas per caballería."

39735. "*Miseria.* From El Caney, Oriente. Pale yellow inside; yielding 14,530 arrobas per caballería."

39736 and 39737.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 11, 1915.

39736. CELASTRUS sp. Celastraceæ.

"*Chiang yeh shu.*"

39737. RHYNCHOSIA VOLUBILIS Lour. Fabaceæ.

"*I ho tzŭ.*"

A twining herb with tomentose, subrotund, ternate leaves and many yellow axillary flowers.

Distribution.—Eastern China and Indo-China.

39738. CANNABIS SATIVA L. Moraceæ. **Hemp.**

From Yokohama, Japan. Procured from the Yokohama Nursery Co. Received January 18, 1915.

"Tochigi production; slender tall variety."

39739. EUONYMUS sp. Celastraceæ.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 14, 1915.

"*Yen chih shu.* Leaves are like laurel; fruit is a little bright-scarlet seed protruding from a little husk." (*Bailie.*)

39740. ERYTHEA EDULIS (Wendl.) Watson. Phœnicaceæ.
Guadeloupe Island palm.

From Santa Barbara, Cal. Presented by Mr. W. H. Morse, through Mr. O. F. Cook, of the Bureau of Plant Industry. Received January 21, 1915.

"This palm has been found in the wild state only on Guadeloupe Island, off the coast of Lower California, but it has been planted widely in the coast region of California and undoubtedly is one of the finest, and at the same time one of the hardiest, of the whole series of ornamental palms. In California it appears to be more hardy than Washingtonia, and since Washingtonia is being grown at Charleston and other Atlantic coast points, the Guadeloupe Island palm may also be able to survive. At least it should be given a fair trial. It may not be as well suited to Florida, on account of the hot, humid summer. Trachycarpus also does not thrive in Florida. We would suggest that seedlings be grown for experimental planting in the Carolinas and other Atlantic Coast States." (*Cook.*)

39741 and 39742. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ.
Sweet potato.

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas. Tubers received January 16, 1915. Quoted notes by Mr. Roig.

39741. "(No. 213.) *Centauro;* pale yellow inside; from Imias, Oriente; yielding 19,130 arrobas (of 25 pounds each) per caballería (33⅓ acres)."

39742. "(No. 92.) *Tornasol;* yellow. From Puerto Principe, Camaguey; yielding 9,918 arrobas (of 25 pounds each) per caballería (33⅓ acres)."

39743 to 39798. PRUNUS SERRULATA Lindl. Amygdalaceæ.
Flowering cherry.

From Tokyo, Japan. Presented by Mr. E. H. Wilson, Arnold Arboretum. Cuttings received January 15 and 23, 1915. Quoted notes by Mr. Wilson.

A collection of named varieties of Japanese flowering cherries. These are from the collection owned by the municipality of Tokyo, and dried flowering specimens are now in the herbarium of the Arnold Arboretum. The supplementary serial numbers are Wilson's collection numbers.

39743 and 39744.

"To be grown on the ordinary Japanese cherry stocks."

39743. No. 2.

39744. No. 3.

39745. No. 4. "To be grown on *Prunus serrulata sachalinensis* stock."

39746 to 39798.

"To be grown on the ordinary Japanese cherry stocks."

39746. No. 5.

39747. No. 6.

39748. No. 7.

39749. No. 8.

39743 to 39798—Continued.

39750. No. 9.
39751. No. 10.
39752. No. 11.
39753. No. 12.
39754. No. 13.
39755. No. 14.
39756. No. 15.
39757. No. 16.
39758. No. 17.
39759. No. 18.
39760. No. 19.
39761. No. 20.
39762. No. 21.
39763. No. 22.
39764. No. 23.
39765. No. 24.
39766. No. 25.
39767. No. 26.
39768. No. 27.
39769. No. 28.
39770. No. 29.
39771. No. 30.
39772. No. 31.
39773. No. 32.
39774. No. 33.
39775. No. 34.
39776. No. 35.
39777. No. 36.
39778. No. 37.
39779. No. 38.
39780. No. 39.
39781. No. 40.
39782. No. 41.
39783. No. 42.
39784. No. 43.
39785. No. 44.
39786. No. 45.
39787. No. 46.
39788. No. 47.
39789. No. 48.
39790. No. 49.
39791. No. 50.
39792. No. 51.
39793. No. 52.
39794. No. 53.
39795. No. 54.
39796. No. 55.
39797. No. 56.
39798. No. 57.

39799 to 39802. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ.
Sweet potato.

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas. Received January 18, 1915. Quoted notes by Mr. Roig; yields stated in arrobas (of 25 pounds each) per caballería (33⅓ acres).

39799. "(No. 29.) *Camaguey;* yellow inside. From Puerto Principe. Yielding 41,982 arrobas per caballería."

39800. "(No. 118.) *Yema de huevo;* yellow. From Colon, Matanzas. Yielding 6,260 arrobas per caballería."

39801. "(No. 30.) *Colorado brujo;* yellow flesh. From Puerto Principe. Yielding 10,436 arrobas per caballería."

39802. "(No. 72.) *Chino blanco;* white. From Taco Taco, Pinar del Rio. Yielding 18,156 arrobas per caballería."

39803 to 39807. ZEA MAYS L. Poaceæ. **Corn.**

From Oroya, Peru. Collected by Dr. J. N. Rose, United States National Museum.

"Corn obtained from Chola women, at an altitude of 12,200 feet, in July, 1914." (*Rose.*)

39803. Light yellow.
39804. Mixed blue and white.
39805. Red.
39806. Brownish.
39807. White.

39808 to 39816. ANNONA CHERIMOLA × SQUAMOSA. Annonaceæ.
Atemoya.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamao Experiment Station. Received January 11, 1915.

Cuttings of the *atemoya*, a new hybrid between the cherimoya and the sugar-apple.

"In 1908, at the subtropical laboratory, Miami, Fla., the writer successfully hybridized the cherimoya and the sugar-apple, the sugar-apple and the custard-apple, the cherimoya and the mamon, and the mamon and the sugar-apple. Several hundred seedlings resulted from this work, part of which were planted out in 1910, the hybrids between the cherimoya and the sugar-apple showing remarkable vigor and thriftiness. In 1911, hybrid seeds of the same combination from a cross made in 1910 were brought to the Philippines and the seeds sown in March of the same year. These hybrids exhibited the same remarkable vigor, and some attained a height of 2.3 meters in one year and bloomed when they were 16 months old. No fruits resulted, however. This year (1913), in the course of the reorganization work at Lamao, where the plants are growing, it became necessary to transplant the hybrids, and their fruiting is on that account unfortunately delayed for another year." (*Wester, Philippine Agricultural Review, vol. 6, 315, July, 1913.*)

The further history of these hybrids is told in the Review for February, 1914: "The blossoming season of the cherimoya is somewhat in advance of that of the custard-apple, but owing perhaps in part to the shock and retardation due to the transplanting, a few flowers appeared in June on one of the transplanted hybrids. One of these was pollinated with pollen from the custard-apple (*Annona reticulata* L.), with the result that it set, and a fruit developed and ripened October 8, 1913. The following is a description of the fruit: Size small, weight 280 grams; length 7.7 cm., equatorial diameter 7.6 cm.; cordiform in shape, with prominent carpels and distinct areoles; exterior yellowish green, almost glabrous; skin very thick and tough; flesh white, tender, and melting, with a slight trace of fiber, juicy, subacid, rich, and aromatic; flavor excellent, very similar to a good cherimoya with a dash of the delicate sweetness of the sugar-apple; seeds 4 to 7, similar in shape to cherimoya seed, but darker colored. The fruit is rather small, but regular and well shaped, about the size of a sugar-apple, which was to be expected considering that the father parent, the cherimoya, was also undersized. With the employment of large-fruited cherimoyas for breeding work we may also anticipate a progeny with larger fruits. The *atemoya* plants, of which there are 23 that have not yet fruited, are very similar in appearance to the cherimoya, and the fruit is also practically identical with the prominent-carpelled cherimoyas. Superior to the sugar-apple, it is not claimed that the *atemoya* is an improvement upon the cherimoya, but it has been hoped by crossing the cherimoya with the sugar-apple the excellent flavor of the subtropical cherimoya, which does not succeed well in the low latitudes near the Equator, might be imparted to the progeny, and that the other parent from the lowlands would impart to it adaptability to a tropical climate. It would seem that this anticipation has been realized in the above instance. The name *atemoya*, which is here being proposed for this new race of fruits, is derived from a combination of one of the old original names of the sugar-apple, *Ate pannicensis* (quoted from Hernandez, in his work 'Nova Plantarum, Animalium et Mineralium Mexicanorum Historia,' published in 1651), and cherimoya." (*Wester.*)

Of the nine plants represented by cuttings, No. 4 [S. P. I. No. 39809] represents the plant which fruited in 1913; the remainder first bore fruit in 1914.

39808. No. 3. "This proved to be one of the best among the hybrids that fruited this season." (*H. T. Edwards.*)

39809. No. 4. "Fruited last year." (*H. T. Edwards.*)

39810 to 39816.

"These proved to be the best among the hybrids that fruited this season." (*H. T. Edwards.*)

39810. No. 5.
39811. No. 6.
39812. No. 11.
39813. No. 12.
39814. No. 14.
39815. No. 16.
39816. No. 17.

39817 to 39819.

From Tolga, Queensland, Australia. Presented by Mr. J. A. Hamilton. Received January 16, 1915. Quoted notes by Mr. Hamilton.

39817. CYMBIDIUM SUAVE R. Brown. Orchidaceæ.

Distribution.—An epiphytal orchid with narrow leaves 1 foot long and racemes of red-blotched greenish flowers, found along streams in Queensland and New South Wales.

39818. PASSIFLORA EDULIS Sims. Passifloraceæ. **Passion fruit.**

"Large-fruited passion fruit. Season 1914."

39819. RUBUS sp. Rosaceæ. **Wild raspberry.**

"Wild raspberry, *Evelyn Table-land No. 2.*"

39820 to 39826. PRUNUS SERRULATA Lindl. Amygdalaceæ. Flowering cherry.

From Tokyo, Japan. Presented by Mr. E. H. Wilson, Arnold Arboretum. Cuttings received January 15 and 23, 1915.

"To be grown on the ordinary Japanese cherry stocks." (*Wilson.*)

39820. No. 58.
39821. No. 59.
39822. No. 60.
39823. No. 61.
39824. No. 62.
39825. No. 63.
39826. No. 64.

39827. FICUS SYCOMORUS L. Moraceæ. Fig.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, Horticultural Division, Gizeh Branch, Ministry of Agriculture. Cuttings received January 26, 1915.

"No. 3. Var. *beledi.* A variety which is most commonly eaten at Alexandria." (*Brown.*)

"The tree is cultivated in Egypt and is identical with the sycamore of Scripture. *Ficus sycomorus*, or the Egyptian fig, seems to be invariably infested with the insect *Sycophaga crassipes*, which is the same insect supposed to effect caprification in Malta, according to Rev. T. F. Marshall. This fig never produces ripe seed in Egypt, though it has been introduced from the earliest times. Not only are the ancient coffins made of the wood, but it was adopted as the sacred 'Tree of Life.' It probably came from Yemen, where Prof. Dr. Schweinfurth saw many seedling trees grown spontaneously. The tree bears three crops per annum, in May, June, and August–September. Boys cut off the top of the figs of the first two crops only. The figs have no pleasant flavor until the operation has been performed; then the figs become very sweet, but remain smaller than when cut open. The object is to let the insect escape. Those that are left become watery and tasteless and are full of namoos or Sycophaga. The instrument used in Egypt for removing the 'eye' or top of the sycamore fig is a kind of thimble made of iron plate ending in a spatula like a finger nail. It is fixed on the thumb of the right hand. The operation is made only on fruits which shall be picked the following day. The day after the operation the fig is quite ripe. The male flowers in those figs are all aborted and the females never have perfect seeds. The figs of the third generation are larger, of an agreeable taste, and sweet scented; but they are not operated upon, only because in August and September, though the trees are much fuller of fruit than in May and June, the people have so much to do at that time. They are seldom sold and only eaten by the owners of the trees, or else they are abandoned to the field mice, birds, and dogs, which latter are very fond of them. These *nilg* fruits are full of Sycophaga. It is a very interesting fact that Pliny also describes the process as closely corresponding with this modern method." (*Muschler, Manual Flora of Egypt, vol. 1, p. 248.*)

For an illustration of this remarkable tree, see Plate II.

39828 and 39829.

From Rome, Italy. Presented by Dr. Gustav Eisen. Cuttings received January 26, 1915. Quoted notes by Dr. Eisen.

39828. FICUS sp. Moraceæ. Fig.

"*Harrar.* A fig from Abyssinia, most interesting and different from *Ficus carica.* Possibly a variety of *Ficus pseudocarica.* Fruit medium; outside violet brown, pulp reddish brown-vermilion, brilliant. Sweeter and better flavored than any other variety when fully ripe. Growth of branches somewhat pendent, leaves like *Broussonetia papyrifera.* Abundant bearer and hardy. Suited, I think, to Texas, Arizona, and southern California. May also do well in some other parts of the South, as it can stand considerable summer rain."

39829. MALUS SYLVESTRIS Miller. Malaceæ. Apple.
(*Pyrus malus* L.)

"*Limoncella* or *Limoncello* apple. Middle and southern Italy, especially Naples down to and including Sicily. The only apple adapted to a warm and dry climate, at the same time possessing qualities which compare favorably with those of good northern apples. It is the best variety of apple grown in Italy for the general market. Medium or below medium, apex truncate, constricted below the apex, wider at base. Oblong, much longer than wide. Stalk short, slender, core long, narrow, solid, with very few seeds, flesh solid, white, sweet and subacid, crisp and juicy. Color of skin lemon yellow, shaded to a very slight pinkish flush. Flavor strong, agreeable, resembling that of certain red Cabernet grapes. Very fine shipper. Ripe from the end of November to February. This variety is not to be preferred to our better American apples in the Northern States, its value consisting in its adaptability to warm countries where the northern apples do not thrive. Should do well in California, Arizona, and Texas in localities with deep and rich soil. It is superior to any California apples grown on the central and southern plains and compares well with those grown in the mountains, except as to size. Retails at 35, 45 to 50 centesimi a kilo, or from ½ to 1 cent American each, more or less, according to size."

39830. HOLCUS HALEPENSIS L. Poaceæ. **Johnson grass.**
(*Sorghum halepensis* Pers.)

From Kirkee, Bombay, Poona, India. Presented by Mr. W. Burns, Ganeshkhind Botanical Gardens, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received January 26, 1915.

39831 to 39833. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. **Sweet potato.**

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station. Tubers received January 25, 1915. Quoted notes by Mr. Roig.

39831. "No. 75. *Cascarillo;* white. From Madruga, Havana. Yielding 23,791 arrobas (of 25 pounds each) per caballería (33⅓ acres)."

39832. "No. 199. *Picadito;* white. From Trinidad, Santa Clara. Yielding 12,617 arrobas (of 25 pounds each) per caballería (33⅓ acres.)"

39833. "No. 98. *San Pedro blanco,* white. From Taco Taco, Pinar del Rio. Yielding 25,217 arrobas (of 25 pounds each) per caballería (33⅓ acres)."

39834. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

From Guemes, Argentina. Presented by Mr. Henry F. Schultz, through Mr. L. J. Keena, American consul general, Buenos Aires. Received January 23, 1915.

"The cherimoya was introduced into Campo Santo from Peru about 50 years ago, and while the famous 'oldest residents,' who heard the tales of the original importers, claim that the fruits have degenerated greatly, it must be admitted that the quality of the present-grown cherimoyas in this region is very fine indeed. I have never eaten as good cherimoyas in Central America or in the United States as are produced here; their flavor and aroma are exquisite and their texture velvety and most delicious. The beautifully fragrant, creamlike pulp melts in the mouth like the best ice cream, and, were it not for the somewhat objectionable seeds, a finer fruit could hardly be imagined. After sampling the locally produced cherimoya I feel no hesitancy in withdrawing the statement which I have made in the States, before visiting this country, that cherimoya culture had no important future in the United States. California can undoubtedly produce at least as good cherimoyas as are raised in this country, and as soon as people acquire a taste for them and learn to know and appreciate the fruit cherimoya culture will become quite an important addition to horticulture in that State." (*Schultz.*)

For detailed information, see report from the American consul, dated December 18, 1914.

39835. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Rome, Italy. Presented by Dr. Gustav Eisen. Received January 26, 1915.

"A different variety from those sent before (S. P. I. No. 34698). Hardy, seeds smaller." (*Eisen.*)

39836. MANISURIS EXALTATA (L. f.) Kuntze. Poaceæ.

(*Rottboellia exaltata* L. f.)

From Sibpur, near Calcutta, India. Presented by the superintendent, Royal Botanic Garden. Received January 23, 1915.

Distribution.—An annual grass with stems 4 to 10 feet high, ranging throughout India, ascending to 7,000 feet in Gurhwal.

39837. ADENOPHORA VERTICILLATA Fisch.

From Harbin, Manchuria. Presented by Mr. Lewis S. Palen. Received January 18, 1915.

"Chinese *Ssu yeh ts'ai*, or 'Four-leaf plant.' Sample taken in September, 1914, on the Sungari River, 50 miles above its confluence with the Amur. It grows all through the woods here and on the open plain, coming earlier in the spring than almost any other save the wild onion. About 6 inches to 1 foot high by the end of May. It makes a delicious green for stewing by the middle of May in a climate where the frost is not out of the ground more than 4 or 5 inches by the middle of April. If it could be introduced at home, it might prove of considerable value. It has an excellent flavor and is superior, in my estimation, to many of the greens used in America. We prefer it to spinach." (*Palen.*)

39838. MYRICARIA GERMANICA (L.) Desv. Tamaricaceæ.

From Darjiling, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens, Seharunpur, India, who procured it from Mr. G. H. Cave, Lloyd Botanic Gardens, Darjiling. Received January 23, 1915.

See S. P. I. No. 39630 for previous introduction and description.

39839 to 39844. JUGLANS REGIA L. Juglandaceæ. Walnut.

From Grenoble, France. Presented by Mr. Thomas W. Murton, American vice consul. Received January 2, 1915.

All are late-blooming varieties from Tullins, Isere, the name of the orchard (*Clos*) from which the nuts came being given in each case.

"As instructed, I made a first trip, on June 23, to Tullins, Isere, and neighboring walnut-growing districts, where I located several fine, vigorous, healthy-looking specimens of the late-blooming variety of walnut trees, cuttings from which are desired later by the Department of Agriculture for experimental purposes.

"It will be my duty also to forward to this department at harvesting time samples of the nuts produced by these trees for comparison and possible sowing.

"This variety, though a good producer, is little appreciated by growers hereabouts, for the reason that the fruit it bears is lighter in weight than most other kinds and consequently not so profitable from a pecuniary point of view; indeed, there is a growing tendency on the part of the farmers in this region to eliminate all such trees from their plantations on this account. As a matter of fact, several of those that I have marked are destined to be cut down in the near future, and the probability is that little by little this particular species will disappear entirely from the region of the Isere to make way for the more esteemed and much preferred grafted *Mayette*, the cultivation of which has greatly increased within the past four or five years in and around Tullins, where several new orchards have been laid out independently of individual plantings.

"On the other hand, the fact should not be lost sight of that the fruit of the late-blooming walnut tree is fine in appearance, relatively large in size, bright in color of both shell and interior skin, and of good taste, although perhaps the meat is not so well nourished or as fine of flavor as the *Mayette* or *Franquette*, but in my opinion it compares favorably with the quality known as *Parisians*, and properly cared for and grafted should prove a good producer." (*Murton. Report dated at Grenoble, France, July 1, 1914.*)

39839. No. 1. Clos Masson.
39840. No. 2. Clos Durand.
39841. No. 3. Clos May.
39842. No. 4. Clos Lafarge.
39843. No. 5. Clos Durand.
39844. No. 6. Clos Bernardin (altitude 2,000 feet).

39845 to 39852. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Cuttings received February 1, 1915.

"The following varieties are largely grown here." (*Edwards.*)

39845. Common *Negros purple.*
39846. *Pampanga dark purple.*
39847. *Luzon No. 1.*
39848. *Luzon No. 2.*
39849. *Cebu light purple.*
39850. *Inalmon.*
39851. *Laguna white.*
39852. *Pampanga light purple.*

39853. OPUNTIA sp. Cactaceæ. **Prickly-pear.**

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, Hawaii Experiment Station. Received February 1, 1915.

"A variety believed to have been introduced into Hawaii by Don Marin." (*Higgins.*)

"A number of years ago the station collected in Honolulu several slabs of an almost spineless cactus. Dr. W. T. Brigham states that he has known this cactus for a long time and that he believes it was introduced by Don Marin. Dr. Brigham suggests that this cactus be called the *Manini cactus* (the Hawaiian form of Marin). These cactus slabs were grown into plants, which after subsequent subdivision have developed into a hedge nearly 100 feet long.

"An opportunity offered to test the hardiness of this cactus in comparison with a number of other drought-resisting plants and several varieties of Burbank's cactus. All of these plants were set out on the island of Kahoolawe in an excessively dry region somewhat exposed to wind. At the end of six months the place was visited again, when it was found that none of the plants had grown except the Marin cactus, which was growing satisfactorily. In the few tests which the station has been able to make, this cactus, under dry conditions, has grown about three times as fast as the Burbank varieties.

"Plant averaging 6 to 8 feet in height, shrubby, and much branched. . . . Petals averaging 25, outer ones short and fleshy, inner ones long and thin, rose to pink in color. . . . The joint changes to a succulent and juicy fruit, 1½ to 2 inches long, 1 to 1½ inches wide, pear shaped to globose, areoles with numerous small spicules, claret red; pulp deep claret red, many seeds, watery and almost tasteless. Rapid growth, very productive, and best propagated from slab cuttings, since the seeds are liable to be cross-fertilized with the spiny Opuntias.

"Since this cactus is of rapid growth and comparatively free of spines, it is worthy of attention as an ornamental hedge and as a fodder plant." (*Report of the Hawaii Agricultural Experiment Station, 1914, p. 17 and 32.*)

39854 and 39855. Cucumis melo L. Cucurbitaceæ.

Muskmelon.

From Madrid, Spain. Presented by Señor Gregorio Cruz Valero. Received January 14, 1915. Quoted notes by Señor Valero.

39854. "Seeds of a single winter melon. This is cultivated here alternately with cereals in dry lands. It does especially well in dry farming. The earth is argillaceous, calcareous, and silicate to a great depth. In Tunis, after the cereal which precedes it is harvested, it receives in September or October a good working to a depth of 30 cm., to receive the water from the autumn rains. In February it is given another more superficial working, and at the coming of spring, the first of March or April, it is given a third working, preparatory to sowing. Sowing requires the opening of holes to a depth of 25 cm. or less. After this a layer of manure is placed in the holes to a depth of 4 cm., and then loose earth. On this four or five seeds are sown and covered with loose earth. The successive operations consist of continuous efforts to prevent the dust mulch from being lost and to avoid evaporation. During the growing season there is little rain and storms are rare. The distance between the hills is 2 to 2.25 meters, according to the condition of the earth, and about the same between the rows. The harvesting is done in September. The degree of ripeness at which the fruit should be separated from the plant is known by the fact that it is quite white and has reached the highest development, and before the odor is noticed. I have said that four or five seeds should be placed in each hill, but after germination, when they have reached a development of 25 to 30 cm., the two strongest, or the strongest plant, is left and the distance between the plants is made accordingly."

39855. "Mixed winter melon seed, selected from the same variety as S. P. I. No. 39854."

39856 to 39858.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, Horticultural Division, Gizeh Branch, Ministry of Agriculture. Cuttings received February 3, 1915. Quoted notes by Mr. Brown.

39856. Tamarix aphylla (L.) Karsten. Tamaricaceæ. Tamarisk.

"This is by far the best of the Egyptian species for cultivation as a timber tree on desert land. We have employed it largely as a wind and sand break, at the sewage farm at Khanka, which is situated on what was unreclaimed desert land. The cuttings were planted along shallow water channels, containing in one case chlorine equivalent to sodium chloride to the extent of 1,272 parts per million and in another case to the extent of 2,028 parts per million. *Tamarix aphylla* very rarely produces seed here."

Distribution.—A tree 20 to 30 feet high, found in Algeria and Egypt in northern Africa, and from Persia and Arabia eastward to India.

39857 and 39858. Ficus sycomorus L. Moraceæ. **Fig.**

39857. "Var. *Roumi;* usually eaten at Cairo."

39858. "Var. *Kilabi;* never eaten."

For an illustration of this remarkable tree, see Plate II.

39859. LOROMA AMETHYSTINA O. F. Cook. Phœnicaceæ. Palm.

From Santa Barbara, Cal. Presented by Mr. C. B. Hale, through Mr. O. F. Cook, of the Bureau of Plant Industry. Received February 3, 1915.

"Seeds of a palm that has proved to be well suited for outdoor planting in California. It has been grown under several names, *Ptychosperma elegans*, *Seaforthia elegans*, *Archontophoenix alexandrae*, and *Archontophoenix cunninghamiana.* But after a study of the original descriptions of these genera and species, the California palm does not appear to be referable to any of them, and has to be described as new. A preliminary account is being published in the Journal of the Washington Academy of Sciences, with the name *Loroma amethystina.* Although the species is well known in California and is undoubtedly available through dealers under the different names, it may be worth while to make at least a limited distribution of seedlings from the original tree on which the new genus and species are being based. The type individual is in the collection of Mr. C. B. Hale, under the care of Mr. W. H. Morse. The palm is larger and has longer and more spreading leaves than the true *Ptychosperma* or *Seaforthia elegans* [S. P. I. No. 38112]. On the other hand, it is a smaller palm than the true *Archontophoenix alexandrae.* It may be worth while to have a considerable planting of this palm made at the new Miami garden, in order to test its adaptability to the local conditions. On account of the former confusion of names, we do not know whether the reports that have been made regarding the behavior of *Seaforthia* and *Ptychosperma* in Florida relate to this palm or to others." (*Cook.*)

39860 and 39861.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received February 3, 1915.

39860. ABIES SACHALINENSIS NEMORENSIS Mayr. Pinaceæ. Sachalin fir.

Wilson No. 7869.

The species is described as "a tree 130 feet high, native of northern Japan, Saghalien, etc., but so liable to injury by late spring frost in this country as to be of no value. It has the *nordmanniana* arrangement of leaf, but in the forward-pointing leaves, which are three-fourths to 1½ inches long and very white beneath, it resembles *A. veitchii;* buds white, resinous. Cones 2½ to 3½ inches long. Introduced in 1878 by Maries for Messrs. Veitch. I saw a tree about 16 feet high at Murthly Castle, near Perth, in 1906, but even there not in the best of health." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 117.*)

39861. TAXUS CUSPIDATA Sieb. and Zucc. Taxaceæ. Yew.

Wilson No. 7778.

"A tree 40 to 50 feet high in Japan, with a trunk girthing about 6 feet; in cultivation a low tree or spreading shrub; older bark reddish brown. Leaves one-half to 1 inch long, one-twelfth to one-eighth inch wide; linear, tapered rather abruptly at the apex to a fine point; rounded, and with a distinct stalk at the base one-twelfth inch long; dark green above, with a broad, tawny yellow strip composed of 10 to 12 stomatic lines on each side of the green midrib beneath. The leaves are arranged approximately in two ranks, and stand more or less erect from the twig, often forming a narrow V-shaped trough. Fruit red, as in *T. baccata.*

39860 and 39861—Continued.

"Native of Japan, introduced about 1855 by Fortune, and very hardy though slow growing. It thrives extremely well in the trying New England climate and is apparently one of the best evergreens introduced there. There are two distinct forms of it in cultivation, the one a tree, the other, var. *compacta*, a compact, low bush, wider than it is high. Whilst the general aspect is the same as that of the English yew, it can be distinguished by the marked yellow tinge of the under surface of the leaves, and by the longer, more oblong winter buds, with looser, more pointed scales." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 582.*)

39862 to 39864. LINUM spp. Linaceæ. **Flax.**

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received February 1, 1915.

39862. LINUM GRANDIFLORUM Desf.

Var. *roseum.*

39863. LINUM PERENNE L. 39864. LINUM CAMPANULATUM L.

39865. JACQUEMONTIA COELESTIS Planchon. Convolvulaceæ. **Nepal creeper.**

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Cuttings received February 6, 1915.

"The beautiful Nepal creeper; a free bloomer, not very tall growing. Flowers sky blue, quite showy." (*Regnard.*)

39866. CASTANEA sp. Fagaceæ. **Chestnut.**

From China. Presented by Rev. W. F. Hayward, American Church Mission. Received January 30, 1915.

39867. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Kingston, Jamaica. Presented by Mr. W. Harris, Hope Gardens. Received February 11, 1915.

39868. (Undetermined.)

From Monrovia, Liberia. Presented by Dr. C. C. Boone. Received January 20, 1915.

"Seeds of the best Liberian cherry." (*Boone.*)

39869. DERINGA CANADENSIS (L.) Kuntze. Apiaceæ.
(*Cryptotaenia canadensis* DC.)

From Brooklyn, N. Y. Presented by Dr. C. Stuart Gager, director, Brooklyn Botanic Garden. Received February 11, 1915.

"*Mitsuba, Mitsuba-jeri*, a perennial herb of the order Umbelliferæ, growing wild in moist valleys, but much cultivated from seeds or by dividing the roots. In spring, young leaves come forth to a height of about 1 foot. They are eaten boiled, and the roots can also be eaten fried. One variety with fine threadlike petioles and shooting bushes 8 to 10 inches high is called *Ito mitsuba* (thread honewort)." (*Useful Plants of Japan, p. 12, No. 59.*)

Described by Mr. Kuwashima as one of the highest priced vegetables cultivated in Japan, and the young shoots are recommended as an excellent green salad.

39870 to 39874.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison. Received February 12, 1915. Quoted notes by Mr. Harrison.

39870. (Undetermined.)

"Seeds of the Australian sour plum, a tree of palmlike habit of growth. The purple plums are formed in clusters on the bark of the tree."

39871. HICKSBEACHIA PINNATIFOLIA Mueller. Proteaceæ.

"*Red bush nuts.* This tree grows to the height of 30 or 40 feet, and the fruit is borne in racemes, attached to the bark and branches of the tree, each carrying 10 or 12 fruits. The flavor is not quite so good as the Queensland nut, *Macadamia ternifolia*, nor does it keep so well, but nevertheless they are sold in some fruit shops here at 12 cents per pint. I do not think they have been cultivated anywhere in the United States, but could easily be grown in any of the warm Southern States."

39872. HOVEA LINEARIS (Smith) R. Brown. Fabaceæ.

"A handsome blue-flowered leguminous shrub, 8 to 10 feet in height. Stock eat the foliage, and it is also a good fertilizing plant, rich in ammonia."

39873. KENNEDYA RUBICUNDA (Schneev.) Vent. Fabaceæ.

"A long, coarse vine, bearing a profusion of red flowers. The foliage is eaten occasionally by stock. It would be useful for arbors and should prove useful as a fertilizing plant. Very rich in ammonia."

39874. STERCULIA sp. Sterculiaceæ.

"A handsome ornamental shrub 12 to 15 feet in height. Grows in sandy soil. The pods, which are several inches in circumference, form in clusters of 5 to 7; when ripe they turn scarlet and when open the round, black seeds adhere to the edges of the capsule."

39875. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. Pummelo.

From Upper Burma, India. Presented by Mr. F. Kingdon Ward. Received February 8, 1915.

"Grown in Shan villages on the plain of Hkamti Loong (1,200 feet), but scarcely cultivated. Soil alluvial and sandy; with proper manuring and pruning would probably give an excellent fruit. Very juicy. Seems to differ from the ordinary Indian fruit." (*Ward.*)

39876. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Manila, Philippine Islands. Presented by Mr. Cleve W. Hines, sugar technologist, Bureau of Agriculture, Manila. Cuttings received February 15, 1915.

"*Negros purple morada.* One of the main reasons why this cane is quite popular here is on account of its soft shell or outer tissue, which facilitates its milling in the small native plants and gives a greater percentage of juice than the finer varieties. Improved varieties have given much better results in the large modern factories as well as increased yields in the fields." (*Hines.*)

39877 and 39878.

From Paris, France. Procured from Vilmorin-Andrieux & Co. Received February 16, 1915.

39877. Eleusine coracana (L.) Gaertn. Poaceæ. **Ragi millet.**

39878. Pennisetum glaucum (L.) R. Brown. Poaceæ. **Pearl millet.**
(*Pennisetum typhoideum* Rich.)

39879. Citrus grandis (L.) Osbeck. Rutaceæ. **Pummelo.**

From China. Presented by Mr. W. Paddock, Ohio State University. Received February 11, 1915.

39880. Garcinia morella (Gaertn.) Desr. Clusiaceæ.

From Cienfuegos, Cuba. Presented by Dr. Emilio Cabada. Received February 16, 1915.

See S. P. I. Nos. 12693 and 17995 for previous introductions and description.

"Produces a small edible fruit, similar in shape and size to a cherry. The tree reaches a height of 10 to 15 meters and produces the best quality of Cambodian gamboge." (*L'Horticole Coloniale, Catalogue des Plantes Economiques pour les Colonies.*)

39881 to 39886. Juglans regia L. Juglandaceæ. **Walnut.**

From Grenoble, France. Presented by Mr. Thomas W. Murton, American vice consul. Bud sticks received February 19, 1915.

See S. P. I. Nos. 39839 to 39844 for description.

All are late-blooming varieties from Tullins, Isere, France, the name of the orchard (Clos) from which the nuts came being given in each case.

39881. No. 1. Clos Masson.
39882. No. 2. Clos Durand.
39883. No. 3. Clos May.
39884. No. 4. Clos Lafarge.
39885. No. 5. Clos Durand (bis).
39886. No. 6. Clos Bernardin (altitude 2,000 feet).

39887. Annona reticulata L. Annonaceæ. **Custard-apple.**

From Quilimane, Portuguese East Africa. Presented by Mr. E. H. Heron, acting director of agriculture, Beira, Mozambique. Seed received February 2, 1915, as *A. senegalensis*.

"These prove to be seeds of *A. reticulata*, a cultivated species introduced into Africa from America. *A. senegalensis* is not as good as the ordinary cultivated species of *A. reticulata* and *A. squamosa*. It is, however, valuable on account of the size to which it grows as stock for other species, and it is of special botanical interest, since all other edible annonaceous fruits are of American origin, while it is African." (*Safford.*)

39888 and 39889. Cannabis sativa L. Moraceæ. **Hemp.**

From Turin, Italy. Presented by the American consul. Received February 11, 1915.

39888. "No. 19. *Carmagnola.* Hemp is cultivated in the Provinces of Turin and Cuneo between Carmagnola and the Po. It is said that no other country in the world can produce such fiber and seed. Some botanists have classified Carmagnola hemp as a distinct variety

39888 and 39889—Continued.

under the name *Cannabis sativa excelsior*. The area under cu is 2,314 acres, and the production of fiber 11,110 tons (?). Carmagnola hemp is more productive and more vigorous than that of Emilia, and it is said to be resistant to Orobanche. Its stalks are 3 to 4 meters high. It is sown by hand, pulled by hand, and water retted. The yield is about 1,000 pounds per acre. Fiber of inferior quality is obtained from seed stalks." (*From abstract of report on Agriculture and Industries of Piedmont by Major Percy Chapman, Textile Mercury, October, 1914.*)

"It grows somewhat taller and thicker in stalk than the other varieties of hemp cultivated in this vicinity and is the most in demand by planters." (*Charles B. Perry, American consul, report of January 21, 1915.*)

39889. "No. 30. *Bologna* hemp is grown on the rich alluvial soils of the lower Po Valley, in the Provinces of Bologna, Ferrara, Modena, Emilia, and Rovigo, in northeastern Italy. Greater care is given to the crop in this region than anywhere else, and the result is hemp of the finest quality and highest price on the market. Nearly 200,000 acres are devoted to the crop each year, and the annual production is more than 80,000 tons. A 2-year rotation with wheat is practiced, the land being plowed 12 to 18 inches deep in June immediately after the wheat is harvested and thoroughly cultivated until the hemp seed is sown the following February. The crop is cut by hand, water retted, and broken mostly by machinery. Seed produced in Ferrara or Bologna gives a hemp with a light, hollow stick, while the Carmagnola variety gives a more woody stick with a smaller percentage of fiber." (*L. H. Dewey.*)

"*Ferrara* hemp is the common name of the Bologna type most grown in the Piedmont district." (*Charles B. Perry, American consul, report of January 21, 1915.*)

39890. Cucurbita sp. Cucurbitaceæ.

From La Paz, Bolivia. Presented by Dr. J. N. Rose, National Museum, Washington, D. C. Received February 15, 1915.

"Seeds of a large pumpkinlike plant, obtained from the market at La Paz, Bolivia." (*Rose.*)

"A large globose, pumpkinlike fruit, found in the markets of Peru and Chile and said to have been cultivated in prehistoric times by the natives of those regions; highly esteemed by the modern inhabitants; smooth outside, with yellow flesh, and large seeds which are used as articles of food. Suitable for the warmer regions of the United States where irrigation is practiced." (*Safford.*)

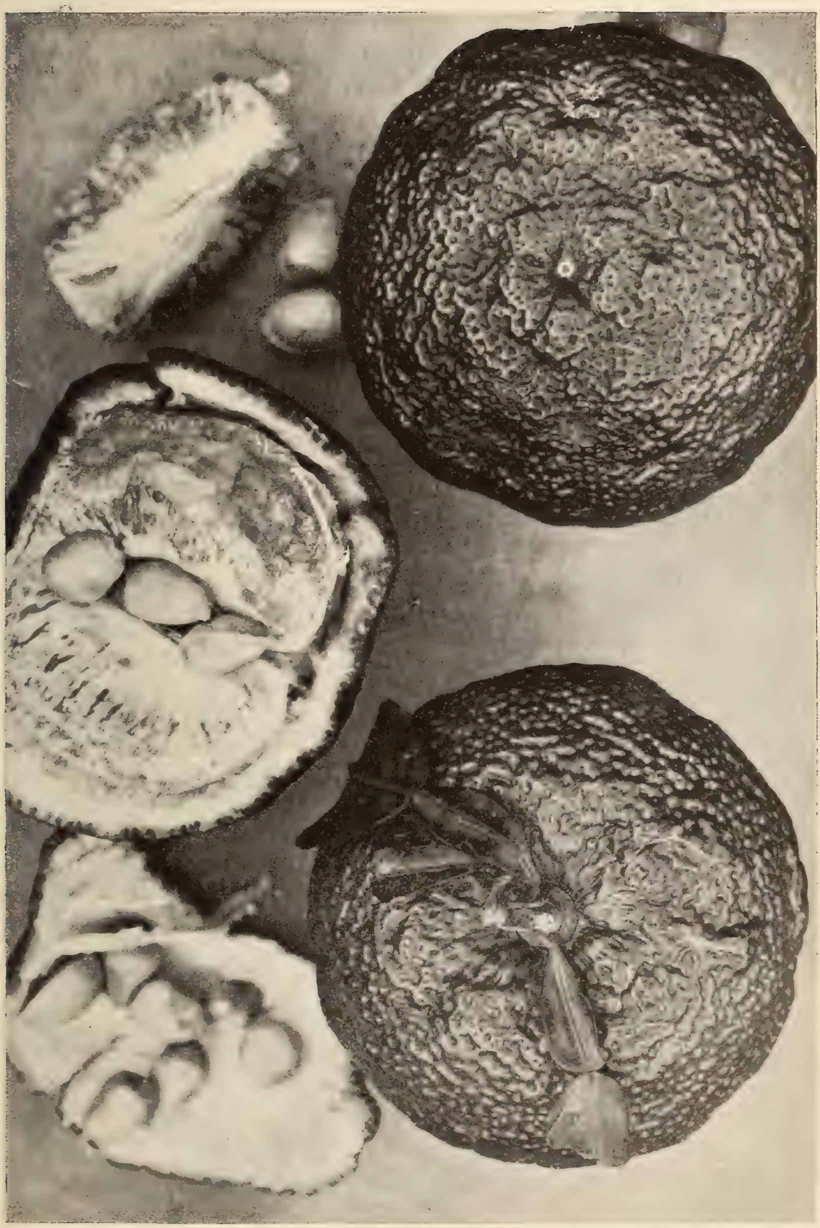
39891. Citrullus vulgaris Schrader. Cucurbitaceæ.

Watermelon.

From Burttholm, Vereeniging, South Africa. Presented by Prof. J. Burtt Davy, Transvaal Maize-Breeding Station. Received February 17, 1915.

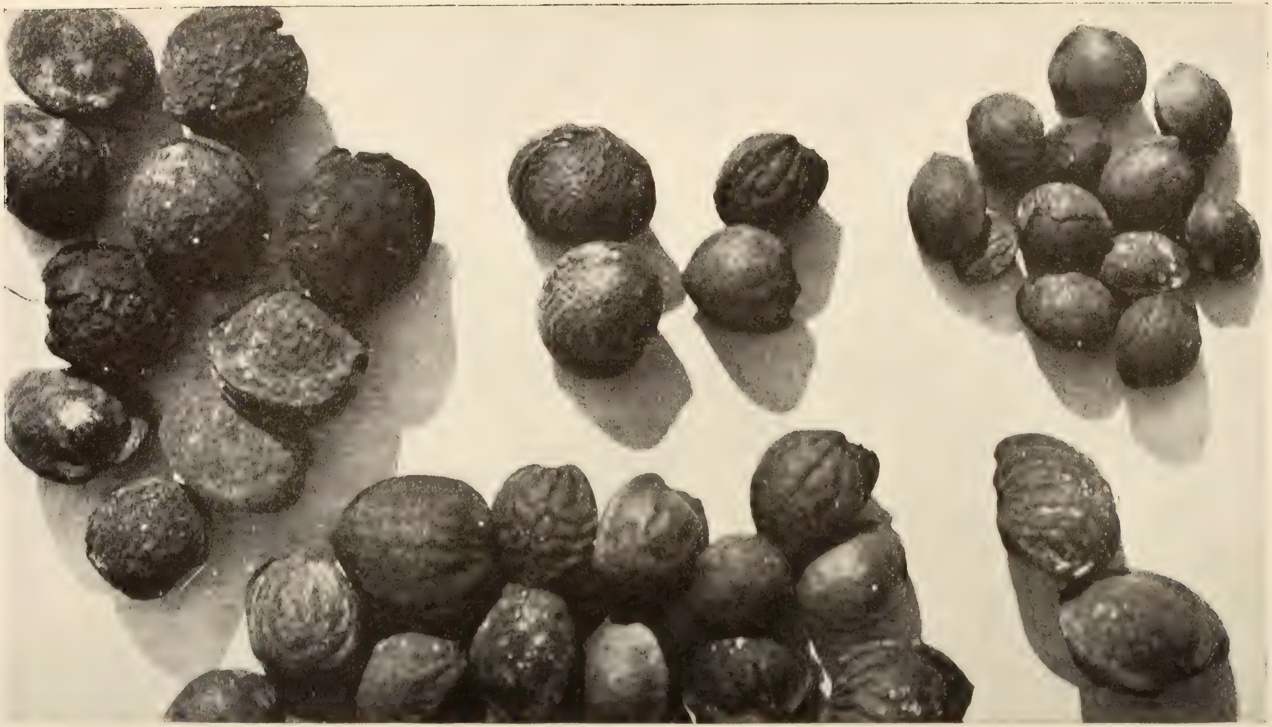
"Seeds of the true *Tsama* melon, sent to me from Kuruman as having been collected in the heart of the Kalahari Desert. I send these because there is so

PLATE III.



AN INTERESTING HARDY CITRUS FRUIT FROM KANSU, CHINA (CITRUS SP., S. P. I. NOS. 39897 AND 40039).

A peculiar loose-skinned fruit with light yellow rind, agreeable sharp-sour taste and lemon odor. The trees are thrifty and apparently prolific. This species is found at altitudes of 2,000 to 4,500 feet in a region where persimmons, figs, pomegranates, walnuts, and pears are cultivated. Photographed by Frank N. Meyer, October 20, 1914 (P13140FS).



THE TANGUTIAN BUSH ALMOND (AMYGDALUS TANGUTICA, S. P. I. NO. 39898).

A very interesting bush almond from altitudes of 4,000 to 10,000 feet in the Province of Kansu. The fruits are very variable in size, with generally small stones, the kernels of which are used for oil extraction. The species may have value as a hedge plant for dry regions and also as an ornamental spring-flowering shrub in the cooler semiarid regions of the United States. The introduction of this species may suggest to breeders the possibility of producing a commercial bush almond. Photographed by Frank N. Meyer, Siku, Kansu, China, November 15, 1914 (P13093FS).

much seed of other desert melons now distributed under the name *Tsama* that it is often doubtful whether people have the real thing." (*Davy.*)

This is the great forage melon of the Kalahari, described by explorers as of considerable value for cattle feed in that region.

39892. Colocasia antiquorum Schott. Araceæ. Egyptian taro.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, Department of Agriculture, Gizeh branch. Tubers received February 20, 1915.

"The common name of the plant in Egypt is *Qolqas.* The plant is just coming into flower (October 6). It is an important crop in some districts of this country." (*Brown.*)

"This plant is of the same type as the specimens received from Syria and Madeira, as well as from some other parts of the world. It is inferior in quality to the dasheen." (*R. A. Young.*)

39893 to 39895.

From Burma, India. Collected by Mr. F. Kingdon Ward. Received February 8, 1915. Quoted notes by Mr. Ward.

39893. Eleusine coracana (L.) Gaertner. Poaceæ. Ragi millet.

"Grain grown to supplement maize and mountain rice for making flour. Grown by the Marus, Nmaihka Valley, on dry hillsides, not irrigated, 4,000 to 5,000 feet. Soil from disintegrated granite. Also by Lisus in Salwin Valley under similar conditions."

39894. Nicotiana tabacum L. Solanaceæ. Tobacco.

"Tobacco grown by the Marus, far Upper Burma, Valley of Nmaihka or eastern Irrawaddy. Altitude 4,000 to 5,000 feet. Soil from disintegrated granite. Monsoon rains in the summer, very hot. Winter cold but no snow; lies too low."

39895. Zea mays L. Poaceæ. Corn.

"Maize grown by Lisus and Marus, Valley of Nmaihka and eastward, 5,000 to 8,000 feet. Poor soil from disintegration of granite rocks, but soil previously covered with forest which is cut and burnt on the spot. Heavy summer rainfall. Maize ripens in July and August."

39896. Garcinia mangostana L. Clusiaceæ. Mangosteen.

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Cuttings received February 23, 1915.

39897 to 39924.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Cuttings (except of 39914) received February 23, 1915. Quoted notes by Mr. Meyer, except as otherwise indicated.

39897. Citrus sp. Rutaceæ.

"(No. 1221. From near Lianjapa (near Hsiku), Kansu, China. October 19, 1914.) A peculiar species of citrus growing into a large tree, bearing loose-skinned, round, flattened fruits the size of mandarin oranges. Color of rind, light yellow; rind full of oil glands, smelling like a fine lemon; segments separating easily; fairly juicy and of an agreeable

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

sharp sour taste; contains plenty of large seeds. These sour mandarin fruits make a very pleasing 'ade cut up, rind and all, in a tumbler of water with some sugar added. They also taste well when cut up in slices in hot tea, while a few pieces of rind added to a soup or stew give a novel and agreeable flavor.

"The trees are of thrifty growth, making large heads of dark-green foliage; they are prolific bearers, apparently; young shoots armed with large spines. They are not grafted or budded, but propagated from seeds only. This citrus is found at altitudes of 2,000 to 4,500 feet, and where they grow one finds the following trees cultivated: *Diospyros kaki; Ficus carica; Punica granatum; Juglans regia; Pyrus sinensis; Morus alba; Hovenia dulcis; Ligustrum lucidum; Trachycarpus excelsus;* and *Phyllostachys* sp. Of value, possibly, as a tree for the home garden in sections north of the citrus belt proper."

For an illustration of this interesting fruit, see Plate III.

39898. AMYGDALUS TANGUTICA (Bat.) Korsh. Amygdalaceæ. **Almond.**
(*Prunus tangutica* Koehne.)

"(No. 1222. Village of Lantsai (near Hsiku), Kansu, China. October 28, 1914.) A bush almond found in rocks and cliffs along the right bank of the Hsiku River, collected at an altitude of 4,200 feet. Shrubs from 4 to 10 feet high, in sheltered places reaching even a height of 20 to 25 feet; densely branched, branches often zigzag running and ending in spines. Foliage small and of a glaucous green color. Fruits very variable in size, looks, and shape; skin downy and thin; stones ranging in size from that of a cherry stone up to a good-sized apricot stone, of many forms, some round and quite smooth, others pointed or heart shaped and grooved like peach stones, shells moderately thin, kernels small on the average and quite bitter; they are, however, eagerly collected by ground squirrels. Here and there local Chinese also collect them and express a clear oil from the kernels for culinary purposes. These kernels are also sparingly eaten after having been boiled first, so as to remove part of the bitter flavor.

"This Tangutian almond occurs in many places in the Province of Kansu, growing at altitudes of 4,000 to 10,000 feet. They are able to withstand a great degree of drought, cold, and dry heat. It is recommended as a factor in certain hybridization experiments, trying to create hardy bush almonds. As a stock for almonds it might be tested, but since it throws up many shoots from the base it may not have any commercial value. As a hedge plant for dry regions it also possesses value, while as an ornamental spring-flowering shrub it possibly could be employed in gardens and parks in the cooler parts of the semiarid United States. Chinese name *Yeh hsiao hsing,* meaning 'wild small apricot'; also *Mao t'ao,* meaning 'hairy peach.'"

For an illustration of these almonds as grown in China, see Plate IV.

39899. AMYGDALUS PERSICA POTANINI (Bat.) Ricker. Amygdalaceæ.
(*Prunus persica potanini* Batal.) **Potanin's peach.**

"(No. 1223. From village of Tchutsaitze (near Hsiku), Kansu, China. October 29, 1914.) A wild peach of the *davidiana* type, but differing from the last in various points. Collected at the base of sheltered mountains at an altitude of 4,300 feet. A tall shrub or even small tree, up to 30 feet in height bark of stem or trunk dark reddish

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

brown and quite smooth in the younger shoots; leaves like those of *Amygdalus davidiana*, but often broader in the middle and always less pointed. Fruits of round elongated form; skin covered with a heavy down, no edible flesh; stones of elliptical shape, grooves longer than in *A. davidiana*, shells very hard and thick, kernels elongated and relatively small. Found growing at altitudes of 4,000 to 7,000 feet, in side valleys away from the Hsiku River; thrives especially well in sheltered and warm mountain pockets. Of value especially like *A. davidiana* as a stock for stone fruits and possibly able to stand even more dry heat; also recommended as an ornamental spring-flowering tree, especially for the drier parts of the United States. Chinese name *Mao t'ao*, meaning 'hairy peach.'"

39900 to 39904.

From near Kagoba (south of Hsiku), Kansu, China. Collected November 1, 1914.

39900. POPULUS SUAVEOLENS PRZEWALSKII (Maxim.) Schneider. Salicaceæ. Poplar.

"No. 1224. A poplar, growing into a tall tree with a trunk of ashy gray color, looking quite distinct from any ordinary poplar; leaves large and somewhat grayish underneath. Found mainly where the soil retains its moisture. Of value as a stately avenue and park tree for those sections of the United States where winters are not too severe. Collected at an elevation of 8,000 feet. Chinese name *Shui pai yang*, meaning water white poplar.'"

For an illustration of these poplar trees as found growing in China, see Plate V.

39901. SALIX sp. Salicaceæ. Willow.

"No. 1225. A willow with scaly bark, mostly seen as a shrub, but grows also into a medium-sized tree. Found on exposed mountain plateaus up to 11,000 feet. Of value for windbreaks in northern localities."

39902. PRUNUS BRACHYPODA Batalin (?) Amygdalaceæ. Cherry.

"No. 1226. A wild cherry growing into a tall shrub or small tree, collected at an altitude of 9,000 feet. Bears fringed leaflets at base of leaf petioles. Colors up brilliantly in autumn. Of value possibly for breeding purposes, as a stock, and as an ornamental garden shrub for cool regions."

39903. EUONYMUS sp. Celastraceæ.

"No. 1227. A spindle wood, growing into a medium-sized tree with a dense, well rounded-off head of branches. Leaves round, elliptical, of opaque green color, and somewhat wrinkled. Collected at an altitude of 8,000 feet. Of value as an ornamental park tree for the cooler sections of the United States."

39904. FICUS sp. Moraceæ. Fig.

"No. 1228. A fig found growing in rocks, apparently of a shrubby nature; only seen once. Leaves quite elongated and rough to the touch. Collected at an altitude of 6,000 feet. Of value possibly in regions where the winters are not too severe."

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

39905 to 39911.

From near Paodji (near Hsiku), Kansu, China. Collected November 6 and 7, 1914.

39905. DIPELTA YUNNANENSIS Franchet. Caprifoliaceæ.

"No. 1229. A shrub of the appearance of a Lonicera, but bearing triangular, winged fruits. Found in a few places on overgrown mountain slopes at altitudes of 7,000 feet. Of value possibly as an ornamental garden shrub."

39906. DEUTZIA sp. Hydrangeaceæ.

"No. 1230. A Deutzia of vigorous growth, from 6 to 10 feet tall, having large, silvery gray leaves, found between scrub on open mountain slopes at altitudes between 6,000 and 8,000 feet. Of value possibly as an ornamental garden shrub."

39907. CORYLUS CHINENSIS Franch. Betulaceæ. **Hazelnut.**

"No. 1231. A hazelnut growing into a tree 80 to 100 feet tall having a trunk often a few feet in diameter. Bark reddish brown and peeling off in loose layers like that of a birch. Leaves large, of elliptical shape, petioles long, nuts small and each inclosed in a protruded involucre; they are borne in clusters from two and three up to seven and eight. Shell very thick; kernels small, but edible. This hazel tree bears masses of catkins at the time the leaves come down; it looks very much like a birch or an alder, and, aside from its having a utilitarian use as a nut-bearing tree, it also has a decided value for ornamental purposes, especially when planted in a group or a grove of some extent. Through selection and by hybridization possibly strains can be obtained bearing larger nuts with thinner shells and possessing commercial value. The climate where these hazels thrive is not a very severe one, and the trees probably will not be able to stand extreme temperatures. Collected at an altitude of 7,000 feet."

39908. HYDRANGEA sp. Hydrangeaceæ.

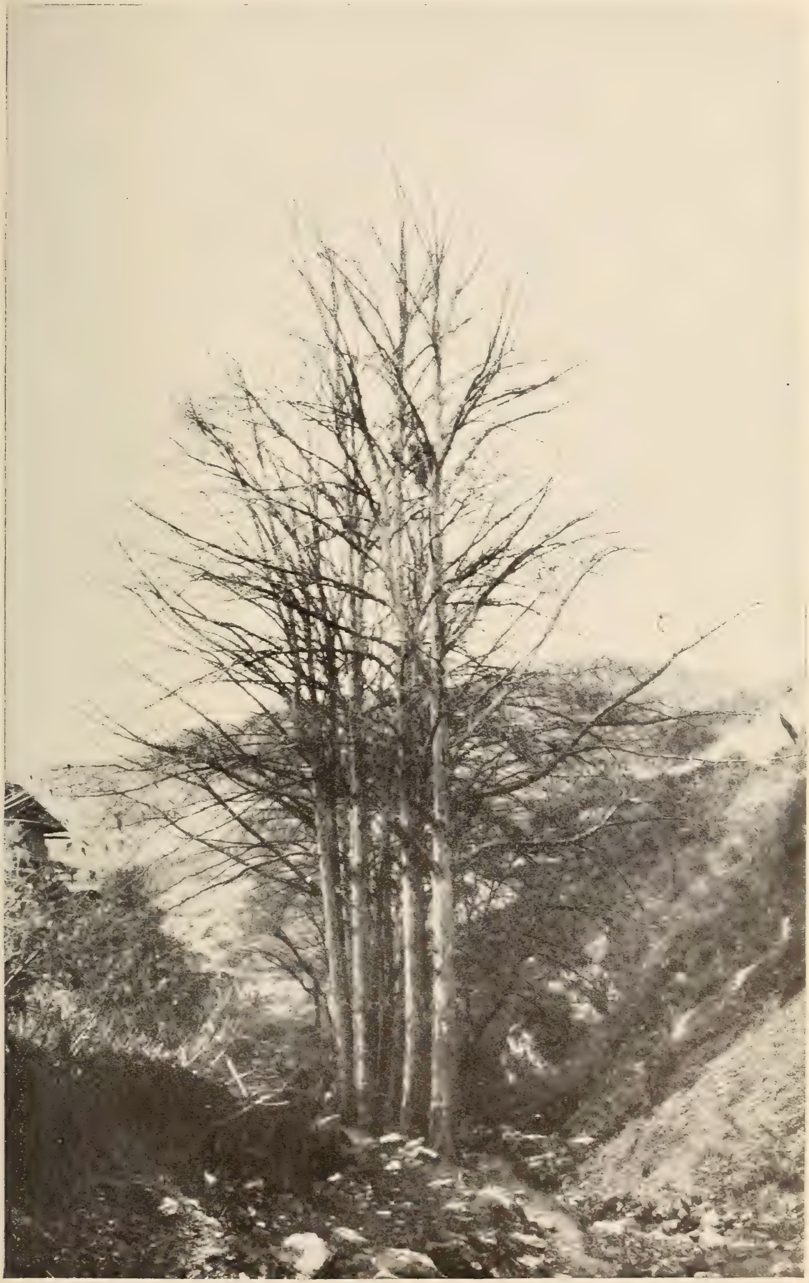
"No. 1232. A shrub of compact and robust growth. Collected in a grove of tall red birches, at an altitude of 8,000 feet. Of value as an ornamental shrub for shady places for the cooler sections of the United States."

39909. CORYLUS TIBETICA Batalin. Fagaceæ.

"No. 1233. A small tree found in between tall scrub on protected mountain sides at 8,000 feet altitude. Bears burs like those of a chestnut, which contain chinkapinlike nuts; it bears, however, also catkins like a hazel or an alder when it is leafless. Leaves somewhat like those of a chestnut, but of a thinner and less persistent structure. Of value possibly as a new nut-bearing tree, fit for regions where the winters are not too severe."

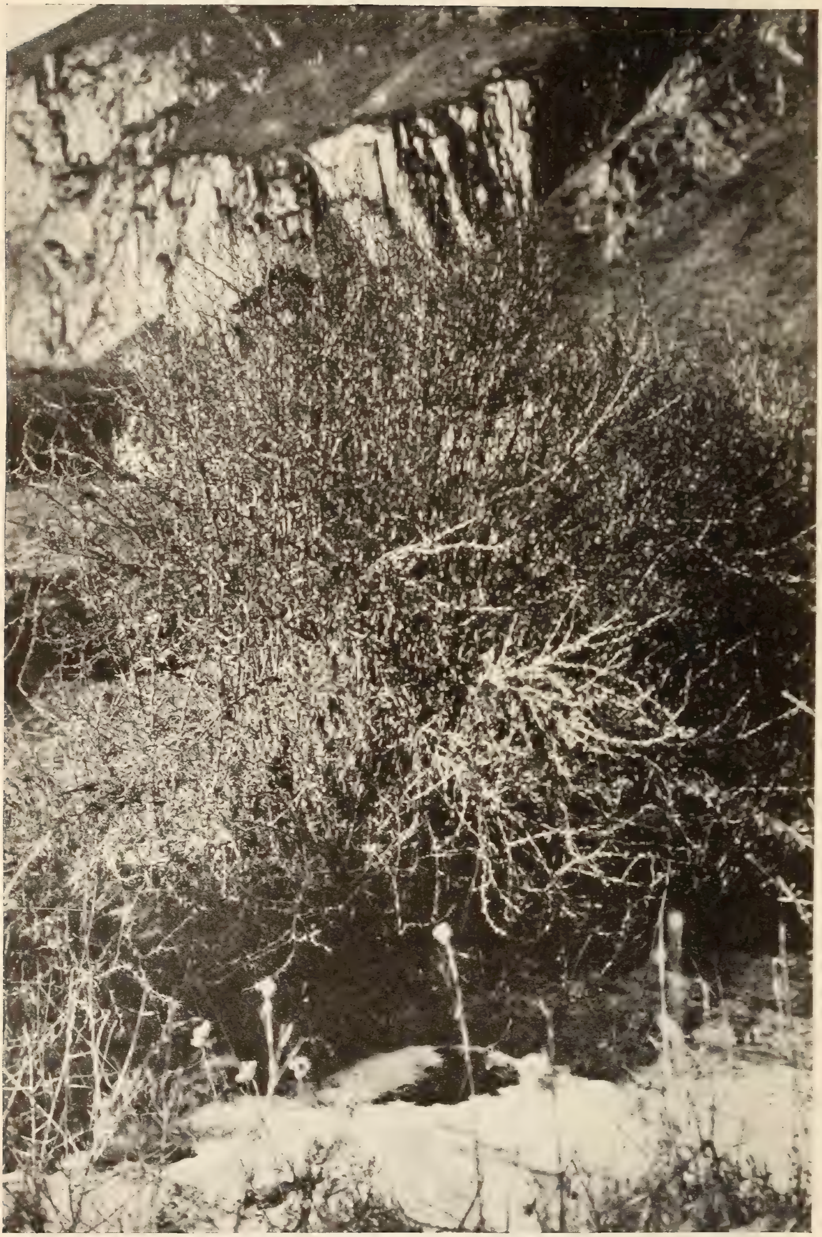
39910. RIBES sp. Grossulariaceæ. **Currant.**

"No. 1234. A currant of very vigorous growth, collected on a sheltered mountain side at an altitude of over 7,000 feet. The shrubs are of open growth and reach a height of 25 feet. Of value possibly for hybridization purposes."



A KANSU POPLAR (POPULUS SUAVEOLENS PRZEWALSKII, S. P. I. NO. 39900).

A stately tall poplar with an ashy-gray trunk and large leaves, grayish beneath; a distinct type. It grows at an altitude of 8,000 feet in Kansu, in moist locations. Called by the Chinese the "Water White poplar." Photographed by Frank N. Meyer, November 1, 1914 (P13165FS).



A TALL-GROWING GOOSEBERRY FROM KANSU, CHINA (RIBES ALPESTRE GIGANTEUM, S. P. I. NOS. 39916 AND 40022).

A remarkably spiny tall wild gooseberry, growing at altitudes of 7,000 to 9,000 feet in the Province of Kansu. Suitable as a hedge plant. The berries are elongated, of medium size, and hang on the bush throughout most of the winter. These fruits are preserved by American missionaries and make a delicious tart jam. Photographed by Frank N. Meyer, near Yangsa, Kansu, November 29, 1914 (P13149FS).

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

39911. Prunus setulosa Batalin. Amygdalaceæ. Cherry.

"No. 1235. A wild cherry growing into a tree 40 to 60 feet tall, with a good-sized trunk. Leaves somewhat tomentose. Collected at an altitude of 7,000 feet. Of value possibly as a stock and for breeding purposes."

39912. Diospyros kaki L. f. Diospyraceæ. Persimmon.

"(No. 1236. Near Kuatsa, on the Hsiku River, Kansu, China. November 10, 1914.) A remarkably large and beautiful persimmon of very flat shape and bearing some furrows on top Color bright deep orange; seedless; nonjuicy; of excellent keeping qualities; can be eaten fresh or dried; not free from pucker. Quite a rare variety. Local name *Mo mo shih tzŭ*, meaning 'loaf of bread persimmon,' though many different forms pass under that name."

39913. Diospyros kaki L. f. Diospyraceæ. Persimmon.

"(No. 1237. Near Hsiku, Kansu, China. November 14, 1914.) A persimmon of square shape, bearing generally a constriction close to the peduncle, also often furrowed vertically. Of light orange color, seedless; nonjuicy; a very good keeper, but of astringent properties when eaten fresh, therefore consumed when roasted or steamed, by which processes the pucker disappears for the greater part; also much eaten dried. Chinese name *Fang shih tzŭ*, meaning 'square persimmon.'"

39914. Daphne tangutica Maxim. Thymelæaceæ.

"(No. 1238. Near Hsiku, Kansu, China. November 17, 1914.) A very beautiful evergreen bush of low and compact growth; foliage dark green and leathery; occurring on stony débris in sheltered ravines and in open woodlands at altitudes of 5,000 to 10,000 feet. Flowers white, with a slight violet tinge, faintly scented, appearing in early spring, though some stray ones can be seen in autumn also. Berries bright red and ripe at the end of May and in early June. This shrub is of high decorative value; it can be employed especially near houses and low walls, and may succeed in sections of the United States where the winters are not too severe, like Long Island, for instance. The plant is apparently easy to propagate from root cuttings, for roots that were seen sticking out amidst pebbles and stony débris and of which the top parts had been chopped off were observed to put forth new sets of branches. In the mountains to the north of Hsiku, where this Daphne occurs in abundance, one also finds great quantities of *Buxus sempervirens* and an evergreen species of Pteris, while ivy clings here and there against the rocks, all this often conveying the impression as if man had brought these plants together here and had made a wild garden of it."

"A low, densely branched, evergreen shrub, of close, neat, sturdy habit; young shoots hairy. Leaves leathery, thick, densely arranged toward the end of the twig; oval inclined to obovate; 1 to 2 inches long, one-half to three-fourths inch wide; stalkless, the base tapered, the apex rounded and notched, margin revolute; dark glossy green, smooth. Flowers produced during early May in a crowded cluster 3 inches across, terminating the branch, each flower borne on a short, conspicuously brown-felted stalk; perianth tube smooth, five-eighths inch long; rosy purple outside, glistening white, tinged with purple, inside; lobes ovate, one-third inch long. Fruit bright red.

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

"Native of western China; discovered by Mr. A. E. Pratt near Tachienlu, at 13,500 feet altitude. Introduced from the same spot by Wilson in 1901. I saw this delightful little bush flowering in the Coombe Wood nursery in April, 1909, and it was exquisitely fragrant, like lilac. The plant is of compact habit and will probably not grow much more than 1 to 2 feet high. It is apparently very hardy and if it can be propagated in sufficient quantity will make a valuable addition to cultivated Daphnes. It has some affinity with *D. odora*, but is easily distinguished by its thick, much smaller notched leaves and the shaggy young shoots and flower stalks." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 474.*)

Rooted plants.

39915 and 39916.

From near Taochow, Kansu, China. Collected November 25, 1914.

39915. LONICERA sp. Caprifoliaceæ. **Honeysuckle.**

"No. 1240. A shrubby honeysuckle of somewhat spreading low growth, occurring in loess cliffs and on table-lands at altitudes of 8,000 to 10,000 feet. Leaves round, elliptical, small; branches angular, with the bark coming off in long, slender strips; berries red. This shrub is apparently very resistant to cold and to drought. Of value as an ornamental and as a low hedge shrub for the colder semiarid sections of the United States."

39916. RIBES ALPESTRE GIGANTEUM Janczewski. Grossulariaceæ. **Gooseberry.**

"No. 1241. A wild gooseberry, growing from 6 to 15 feet tall, found in dry loess embankments at altitudes of 7,000 to more than 9,000 feet. Remarkably spiny; berries medium large, of elongated shape and persisting throughout the greater part of the winter. These gooseberry fruits are preserved by the American missionaries at Kiucheng, and they supply a very delicious tart compote. Of value apparently as a fruiting shrub and as a hedge plant for the cold semiarid sections of the United States."

For an illustration of this tall-growing bush as found in China, see Plate VI.

39917 to 39920.

From near Yangsa (near Titao), Kansu, China. Collected November 29 and 30, 1914.

39917. SIBIRAEA LAEVIGATA (L.) Maxim. Rosaceæ.
(*Spiraea laevigata* L.)

"No. 1243. A shrub growing from 4 to 8 feet tall, found on somewhat moist ground, and in semishady situations; flowers white, in racemes, appearing in June. Of value as an ornamental shrub for the colder sections of the United States. Collected at an altitude of more than 9,000 feet."

"A deciduous shrub of sturdy, bushy habit, 2 to 5 feet high, with thickish, rather sparse, perfectly smooth, brown branchlets. Leaves entire, narrowly obovate; 2 to 4½ inches long, one-half to seven-eighths inch wide; stalkless, tapering at the base, the apex with a short, abrupt point; glaucous green and quite smooth. Flowers white, produced from April to early June in terminal spreading compound panicles 3 to 5 inches high. Native of Siberia; introduced to

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

Britain in 1774. This species, whilst not particularly showy, is quite distinct from all other spiræas in its foliage, which in shape and color is more suggestive of a spurge (Euphorbia) than the genus to which it belongs. Shrubs 4 feet high are often as much as 7 feet through." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 357, under Spiraea laevigata.*)

39918. PRUNUS STIPULACEA Maxim. (?) Amygdalaceæ. Cherry.

"No. 1244. A wild cherry, bearing apparently very small fruits; found in somewhat moist and semishady situations. Grows into a tall shrub with many stems. Collected at an altitude of more than 9,000 feet. Of value possibly as an ornamental shrub, as a stock, and for breeding purposes."

39919. PHILADELPHUS sp. Hydrangeaceæ.

"No. 1245. A mock orange, found between scrub on a mountainside at an altitude of 9,500 feet. Apparently extraordinarily floriferous, to judge by the mass of empty seed capsules that were left. Of value possibly as an ornamental garden shrub for the cooler sections of the United States."

39920. RIBES sp. Grossulariaceæ. Currant.

"No. 1246. A currant of medium tall growth, found beneath tall scrub on a mountain slope at an altitude of 9,500 feet. Of value possibly for breeding purposes."

39921 to 39923.

From Lienhuashan (near Taochow), Kansu, China. Collected November 30, 1914.

39921 and 39922. SALIX sp. Salicaceæ. Willow.

39921. "No. 1247. A remarkable variety of willow, growing into a tall shrub or a bushy small tree and of which the tops for the length of about 1 foot are of a bright yellow color. When seen from above on a sunny winter day they make a strikingly cheerful impression. Of special value for parks when planted in masses or in groups in glens or low-lying places, so that they can be viewed from above. Collected at an altitude of 9,000 feet. Proposed name *Golden-Top* willow. Where these Golden-Top willows grow deep-blue spruces, snowy white birches, and red-wooded dogwoods are also found. This, together with the purplish crags as a background, make a most wonderfully harmonious winter landscape."

39922. "No. 1248. A variety of the *Golden-Top* willow, but with the young twigs of a rich reddish brown color. Of value for parks when planted in masses or in groups in glens or low-lying places, so that they can be viewed from above."

39923. MALUS sp. Malaceæ. Crab apple.

"No. 1249. A peculiar species of crab apple, bearing its small fruits in bunches. These fruits are of the size of peas, are bright red, and possess an agreeably sour flavor; they probably could be well utilized for preserves. The trees are of somewhat dwarf growth and seem remarkably hardy. They may be of value as stocks, as ornamental trees for northern regions, and for breeding purposes. Collected at an altitude of 9,000 feet."

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

39924. POPULUS SIMONII Carrière. Salicaceæ. **Poplar.**

"(No. 1250. Near Chenyatan (near Titao), Kansu, China. December 1, 1914.) A variety of Chinese poplar, the trunk of which is remarkably warty, while the wood seems to be curled, as in bird's-eye maple. Collected on sandy land at an altitude of 8,000 feet. For specialists in figured woods."

39925. CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ. **Sword bean.**

From Changning, Kiangsu, via Swatow, China. Presented by Rev. C. E. Bousfield, American Baptist Mission. Received February 23, 1915.

39926. ANGRAECUM FRAGRANS Thouars. Orchidaceæ.

From Curepipe, Mauritius. Presented by Mr. A. D. de Grandpré. Received February 17, 1915.

The interest attached to this little orchid is due to the persistent vanillalike odor of the leaves when dry, which has led to its use as a tea in Bourbon, in Mauritius, and even to some extent in France. According to a notice of an article on this plant by a M. Gobley, in the Gardeners' Chronicle (1850, p. 599), communicated to the Chemical Gazette, it is considered a digestive and even recommended in diseases of the respiratory organs. The popular name is variously spelled Fahame, Faham, Fahan, Fahon, Fahum, and Faam, of the origin of which I have no information. It is a native of both Bourbon and Mauritius. Leaves few, toward the top of the stem, 3 to 4 inches long by one-half to three-fourths inch broad. Flowers solitary, axillary, 2 inches in diameter across the sepals, pure white, fragrant. (Adapted from *Curtis's Botanical Magazine, pl. 7161.*)

39927. MANISURIS EXALTATA (L. f.) Kuntze. Poaceæ.
(*Rottboellia exaltata* L. f.)

From Poona, Bombay, India. Presented by Mr. W. Burns, economic botanist, Agricultural College. Received February 20, 1915.

"Seeds from my herbarium specimens." (*Burns.*)

Introduced for the work of the Office of Forage-Crop Investigations.

39928 and 39929.

From Lawang, Java. Presented by Mr. M. Buysman, Botanic Garden. Received February 23, 1915.

39928. CANANGIUM ODORATUM (Lam.) Baillon. Annonaceæ.
(*Cananga odorata* Hook. f. and Thoms.) **Ylang-ylang.**

For previous introductions and descriptions, see S. P. I. Nos. 20908, 35243, and 38652.

39929. THUNBERGIA GIBSONI S. Moore. Acanthaceæ.

"A very fine climbing new species from east tropical Africa, with very intense, large, fiery orange flowers." (*Buysman.*)

See S. P. I. No. 39626 for previous introduction and description.

39930 and 39931. Carica spp. Papayaceæ.

From Buenos Aires, Argentina. Presented by Sr. Benito J. Carrasco, director general, Botanic Garden. Received February 23, 1915.

"Indigenous plants of this country." (*Carrasco.*)

39930. Carica papaya L.

39931. Carica quercifolia (St. Hil.) Benth. and Hook.

39932 to 39939.

From Burma, India. Collected by Mr. F. Kingdon Ward. Received February 20, 1915. Quoted notes by Mr. Ward, except as otherwise indicated.

39932. Capsicum annuum L. Solanaceæ. **Red pepper.**

"Dwarf Capsicum grown by the Kachins, near Laza Mali Valley, northern Burma, latitude 26°; open cultivated areas, sandy soil, 1,000 to 2,000 feet; monsoon climate; ripe December, dry season."

39933. Chaetochloa italica (L.) Scribner. Poaceæ. **Millet.**
(*Setaria italica* Beauv.)

"Millet from Kachin Hill tracts."

39934 and 39935. Gossypium spp. Malvaceæ. **Cotton.**

"Grown by Kachins in the mountains west of the Mali River, latitude 25° to 27° N., Upper Burma. Altitude 2,000 to 3,000 feet. Not irrigated. Monsoon climate. Soil friable clays or fine sands, all derived from sandstones."

39936 to 39939. Zea mays L. Poaceæ. **Corn.**

"Grown by Naingvaws in the Valley of Nmaihka, Upper Burma, latitude 26° to 27° N. Altitude 5,000 to 6,000 feet. Soil derived from granite and other igneous rock. Climate, monsoon with frequent breaks of fine hot weather in summer. Not irrigated."

39936. Dark red.

39937. Variegated.

"Some of the seeds on the ear have an unmistakable waxy endosperm. This is the first time that this type of endosperm has been found outside the small region around Shanghai. The early Chinese accounts state that maize was introduced into China from the west, and this region of Upper Burma has always been under suspicion. That this type peculiar to China has reappeared from this region is very suggestive." (*G. N. Collins.*)

39938. Variegated.

39939. Dark yellow.

39940. Citrus medica sarcodactylis (Nooten) Swingle. Rutaceæ. **Bushukan.**

From Yokohama, Japan. Scions purchased from the Yokohama Nursery Co. Received February 24, 1915.

"*Bushukan* differs from the common citron in having the segments of the fruit separated into fingerlike processes. The flowers are very fragrant and are used by the Chinese and Japanese for perfuming rooms and clothing. It is sometimes grown as a dwarf potted plant for ornament. It should be introduced into this country." (*Swingle. In Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 781.*)

39941 to 39945. Ipomoea batatas (L.) Poir. Convolvulaceæ. **Sweet potato.**

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas, Cuba. Tubers received February 19, 1915. Quoted notes by Mr. Roig; yields stated in arrobas (of 25 pounds each) per caballería (33⅓ acres.)

39941. "No. 6. *Papa;* white. From the station. Yielding 10,550 arrobas per caballería."

39942. "No. 200. *Mani;* white. From Trinidad, Santa Clara Province. Yielding 29,217 arrobas per caballería.

39943. "No. 182. *Santiago;* white. From El Caney, Oriente. Yielding 22,817 arrobas per caballería."

39944. "No. 198. *Papayon;* white. From Trinidad, Santa Clara Province. Yielding 6,792 arrobas per caballería."

39945. "No. 24. *Blanco.* From Luyano, Habana. Yielding 43,930 arrobas per caballería."

39946. Prunus maritima Wangenheim. Amygdalaceæ.

From Wading River, Long Island, N. Y. Presented by Mr. E. S. Miller, through Mr. W. F. Wight. Received February 24, 1915.

Pomology No. 80370.

A deciduous shrub of low, compact habit, 4 to 8 feet high and more in diameter, with gray, downy young branchlets, becoming dark with age. Flowers white, one-half inch across, produced in May, usually in pairs or in threes at each bud on last year's shoots. Fruit red or purple, round or oblong, one-half to 1 inch in diameter. Native of the eastern United States, frequently inhabiting sandy or gravelly places near the coast. Its fruits are gathered for preserves, but they appear to vary in quality and sweetness. The flowers are borne profusely in this country [England], and the species is one of the most attractive of dwarf plums. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 242.*)

39947. Quercus insignis Martens and Galleotti. Fagaceæ. **Oak.**

From Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received February 24, 1915.

See S. P. I. No. 39723 for previous introduction and description.

39948 to 39951. Nicotiana sp. Solanaceæ. **Tobacco.**

Collected by Dr. J. N. Rose, United States National Museum. Received February 18, 1915. Quoted notes by Dr. Rose.

39948. "Tobacco from Santa Clara, Peru. Collected July 3, 1914."

39949. "Tobacco seed from near San Bartelome, Peru. Collected July 20, 1914."

39950. "Like *Nicotiana glauca,* but leaves narrow. Collected August 12, 1914."

39951. "Collected September 3, 1914."

39952. Garcinia mangostana L. Clusiaceæ. **Mangosteen.**

From Kingston, Jamaica. Presented by Mr. W. Harris, Hope Gardens. Received February 26, 1915.

39953. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

From Santiago, Chile. Presented by Mr. W. A. Shelly. Received February 26, 1915.

39954. PERSEA INDICA (L.) Sprengel. Lauraceæ.

From Nice, France. Presented by Dr. A. Robertson-Proschowsky, Jardin d'Acclimatation. Received February 26, 1915.

See S. P. I. Nos. 14498 and 19371 for previous introductions.

39955. PASSIFLORA EDULIS Sims. Passifloraceæ. **Passion fruit.**

From California. Presented by Mr. F. O. Popenoe, West India Gardens, Altadena. Received March 1, 1915.

"Grown at Camarillo, Cal." (*Popenoe.*)

39956. ALEURITES FORDII Hemsl. Euphorbiaceæ. **Tung tree.**

From Hankow, China. Purchased from L. C. Gillespie & Sons. Received March 2, 1915.

39957. FERONIELLA OBLATA Swingle. Rutaceæ.

From Saigon, Cochin China. Presented by Mr. P. Morange, Director of Agriculture. Received March 1, 1915.

39958 to 39963. ZEA MAYS L. Poaceæ. **Corn.**

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received March 1, 1915.

39958. "No. 1. Native white (*Moro*). The native white which has been improved by selection during the past three years is very promising and may prove to be valuable elsewhere." (*H. O. Jacobson.*)

39959. No. 2. Native red (*Encarnado*).

39960. No. 3. *Tapol.*

39961. No. 4. *Dali-an.*

39962. No. 5. Native yellow (*Laguna*).

39963. No. 6. *Tiniquit.*

39964. DELONIX REGIA (Boj.) Rafinesque. Cæsalpiniaceæ.
(*Poinciana regia* Hook.) **Royal poinciana.**

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received March 1, 1915.

"*Chivato.*"

"A rapid-growing tree with broad top and wide-spreading branches. Leaves gracefully bipinnate, 30 to 60 cm. long, with 10 to 20 pairs of pinnæ, each pinna with numerous small oval leaflets; flowers large, in large racemes, bright scarlet, the upper petal striped with yellow; calyx segments valvate; petals five, clawed, obovate; stamens 10, free, exserted; pod flat, straplike, 15 to 60 cm. long.

"This handsome ornamental tree is a native of Madagascar. It has become widely spread and is now found in all tropical countries. It yields a yellowish or reddish brown mucilaginous gum containing oxalate of lime." (*Safford, Useful Plants of Guam.*)

39965. CASTANEA CRENATA Sieb. and Zucc. Fagaceæ. **Chestnut.**

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received March 3, 1915.

"A small tree, frequently less than 30 feet high, according to Sargent, but occasionally much larger; young shoots sometimes very downy, with the down persisting through the first winter, sometimes merely scaly. Leaves oblong lanceolate, 3 to 7 inches long, 1¼ to 2 inches wide, heart shaped or rounded at the base, pointed; the teeth small, with bristlelike points; lower surface covered with a close gray down; stalk one-half inch long, downy. Nuts like those of *C. sativa.*

"Native of Japan; introduced in 1905, if not before, to Kew, where young plants are thriving very well. This is a valuable food tree in Japan, and Sargent observes that he never saw chestnuts offered in such quantities for sale in Europe or America as there. Ordinarily the nuts are smaller than those of the European tree, but from selected trees or varieties they are as large as the best European varieties." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 307.*)

39966. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Garden. Received February 23, 1915.

"From Kumaon Gardens, Naini Tal. Called *Garhwal Kaghzi.* I do not think, however, that this seed is true to the name given. *Kaghzi* is the vernacular for paper, and refers to its alleged thin or paper shell. Walnuts are grown only on the hills; the season is from September to December. Walnuts are common in the bazar at about 3 to 4 annas (6 to 8 cents) per hundred." (*Hartless.*)

39967 to 39982.

From Soochow, China. Presented by Mr. N. Gist Gee, Soochow University. Received February 11, 1915. Quoted notes by Mr. Gee, except as otherwise indicated.

39967 to 39972. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

39967. "(No. 1. *Kua shu tou* (*Kwa zoh*). Melon-ripe bean.) This is so named because of its time of ripening. Seeds are sown about the first of May and cropped late in June when melons are ripe. Used only as a vegetable."

39968. "(No. 2. *Chia chia san tou* (*Kah kah sen*). Pod pod three bean.) Planted in the middle of May and reaped during September. Used as a vegetable and for manufacturing oil."

39969. "(No. 3. *Hung hsiang chih tou* (*Ong siang sze*). Red familiar bean.) These are 'Loving beans,' as the characters suggest. Planted in the middle of May and harvested about September. Used both as vegetables and in the manufacture of oil."

39970. "(No. 4. *Hei tou* (*Huk*). Black bean.) Owing to their color, these are called 'Black beans.' Planted in the first part of June and reaped in the middle of October. Used as a vegetable and in the manufacture of oil."

39971. "(No. 5. *Ku li ch'ing* (*Kwa lea ching*). Bone inside green.) Planted early in June and harvested in late October. Used only in making oil."

39967 to 39982—Continued. (Quoted notes by Mr. N. Gist Gee.)

39972. "(No. 6. *Shih tzŭ ho tou* (*Zee tee 'ah*). Persimmon-seed bean.) Planted in the first part of June and cropped in the middle of September. They are largely used as vegetables."

39973. Pisum sativum L. Fabaceæ. **Pea.**

"(No. 7. *Hsiao han* (*Siao ea*). Small cold.) This bean is so named because of the time of planting. The Chinese characters mean 'early winter.' Planted in the middle of October and cropped in late May of the next year. Used as food when young."

39974 to 39977. Soja max (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

39974. "(No. 8. *Pa yüeh pai tou* (*Pah yuih*). Eighth-month white bean.) The combined meaning of its color and its time of ripening indicates the name. Planted in May and harvested in September, which is the eighth month of the Chinese calendar. Used to make oil. This and No. 9 [S. P. I. No. 39975] are the best two for oil manufacture."

39975. "(No. 9. *Shui pai tou* (*Gee buh*). Water-white bean.) Planted in late May and reaped in September. Used to manufacture oil; one of the best two for oil manufacture."

39976. "(No. 10. *Niu t'a pien* (*Nue duh pea*). Cow crush flat.) Its use and time of harvesting are the same as those of the *Gee buh* [S. P. I. No. 39975]. The beans are trodden out by cows; hence the name."

39977. "(No. 11. *Wu ch'iao tou* (*Oh tsah*). Sparrow's cackling (or magpie) bean.) Planted about the last part of June and cropped in mid-October. Used largely to make oil."

39978. Gleditsia sinensis Lam. Cæsalpiniaceæ. **Honey locust.**

G. sinensis is distinguished from *G. caspica* by never apparently having more than 14 leaflets to each simply pinnate leaf. It is found on the mountains near Peking as a tree 40 feet high. Cultivated on the Continent in Paris, Montpellier, Florence, etc., but not in England, according to Henry. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 596.*)

39979. Phaseolus angularis (Willd.) W. F. Wight. Fabaceæ. **Adzuki bean.**

"(No. 13. *Shih tou* (*Ze*). Sowing (or fall) bean.) Planted in the fourth month of the Chinese colendar (May) and reaped in July. Used largely as a vegetable when young."

39980. Dolichos lablab L. Fabaceæ. **Bonavist bean.**

"(No. 14. *Ch'ih tou* (*Tsih*). Red bean.) Planted in the first part of June and cropped in the middle of September. Used as food when mixed with rice."

39981. Phaseolus aureus Roxb. Fabaceæ. **Mung bean.**

"(No. 15. *Pai pien tou* (*Buh pee*). White flat bean.) Planted in the first part of June and cropped in late September. Used as a vegetable and to make cakes."

39982. Soja max (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

"(No. 16. *Lü tou* (*Loh*). Green bean.) Planted in the early part of June and cropped early in September. Used the same as the *Ch'ih tou* [S. P. I. No. 39980]. Called 'green bean' because of its color, probably."

39983 to 39998.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received February 26, 1915. Collected in Japan by Mr. E. H. Wilson.

39983 to 39987. ABIES spp. Pinaceæ. **Fir.**

39983. ABIES MARIESII Masters. **Maries's fir.**

Wilson No. 7595.

"A tree 40 to 50, occasionally 80, feet high, of compact, pyramidal form; young shoots very densely covered with red-brown down, which persists several years; buds small, globose, completely encased in resin. Leaves one-third to 1 inch long, one-twelfth inch wide; dark shining green and deeply grooved above; glaucous beneath, with two broad bands of stomata; apex rounded and notched. The lower ranks spread horizontally, whilst the upper shorter ones point forward and completely hide the shoot. Cones 3 to 4 inches long, about 2 inches wide, rounded at the top, egg shaped, purple when young; bracts hidden.

"Discovered on Mount Hakkoda, in Japan, by Charles Maries in 1878, and introduced by him at the same time. It is one of the rarest of silver firs, and scarcely a good tree exists in the country. I saw a small healthy specimen at Scone Palace in 1906. Two years later, in Mr. Hesse's nursery at Weener, in Hanover, I saw a healthy batch he had raised from seeds. I do not know that it has borne cones in this country. (The fir figured in the Botanical Magazine, t. 8098, is *A. webbiana.*) Maries's fir is best distinguished by the thick red-brown covering of down on the twigs." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 123.*)

39984. ABIES SACHALINENSIS (Schmidt) Masters. **Fir.**

Wilson No. 7613.

"A tree 130 feet high, native of northern Japan, Sakhalin, etc., but so liable to injury by late spring frost in this country as to be of no value. It has the *nordmanniana* arrangement of leaf, but in the forward-pointing leaves, which are three-fourths to 1½ inches long and very white beneath, it resembles *A. veitchii;* buds white, resinous. Cones 2½ to 3½ inches long. Introduced in 1878, by Maries, for Messrs. Veitch. I saw a tree about 16 feet high at Murthly Castle, near Perth, in 1906, but even there not in the best of health." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 117.*)

39985. ABIES SACHALINENSIS NEMORENSIS Mayr.

Wilson No. 7869.

See S. P. I. No. 39860 for previous introduction and description.

39986. ABIES UMBELLATA Mayr.

Wilson No. 7707.

"*Abies umbellata* is quite closely allied to, and may be merely a form of, *A. brachyphylla,* but the leaves are more distinctly separated into two opposed sets, and the V-shaped opening left by the uppermost leaves is much wider; they are also longer (up to 1½ inches), the stomatic bands beneath are narrower and duller white, the apex is much more tapered, and the double points made by the notch are sharp, almost spiny. An interesting distinction is pointed out by Henry in the corrugation of the branchlets; in *A. umbellata* this is less apparent in the second and third years; in *A. brachyphylla* it is more pronounced. A cut branchlet bears a considerable re-

39983 to 39998—Continued.

semblance to that of *A. firma*, but the downy unroughened surface of the shoot of the latter at once distinguishes it. *A. umbellata* appears to have all the beauty and hardiness of *A. brachyphylla*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 119.*)

39987. Abies veitchii olivacea Shirasawa. **Fir.**

Wilson No. 7525.

The species is described by Bean (*Trees and Shrubs Hardy in the British Isles, vol. 1, p. 127*), as "a tree 50 to 70 feet high; young shoots brown, furnished with a more or less scattered, minute down; buds globose, very resinous, purplish. Leaves one-half to 1⅜ inches long, one-sixteenth inch wide, the base tapered, the apex cut off straight and notched; dark glossy green and grooved above, vividly white with stomatic lines beneath. All the leaves point forward, and most of them curve more or less upward; a few occur underneath the shoot, but most of them are above it or at the sides. On lateral shoots growing erect or nearly erect the leaves are arranged about equally around the twig. Cones cylindrical, 2 to 2½ inches long, about 1 inch wide; blue-purple at first.

"Discovered on Fujiyama, Japan, by John Gould Veitch in 1860. Introduced by Maries in 1879. Among silver firs this species is very distinct, on account of the narrow truncate leaves pointed forward and curling upward and intensely blue-white beneath. The best tree I have ever seen is at Murthly, which in 1906 was just over 30 feet high; it is a particularly handsome conifer in a small state, but appears inclined to develop a somewhat lanky habit with age."

"*Aoshirabe* (Japanese). This tree differs from the species chiefly in the characters of the cones, which are cylindrical, somewhat obtusely pointed, 7 cm. (2.8 inches) long, and 25 mm. (1 inch) in diameter, olive-yellow, while those of *A. veitchii* show a deep blue-violet color." (*H. Shirasawa, Mitteilungen der Deutschen Dendrologischen Gesellschaft, p. 256, 1914.*)

39988. Acer capillipes Maxim. Aceraceæ. **Maple.**

Wilson No. 7747.

"A deciduous tree, sometimes 30 to 35 feet high, the branchlets erect when young and marked with whitish stripes running lengthwise; branchlets smooth. Leaves reddish when young, three lobed; 3 to 5 inches long, about three-fourths inch wide; smooth, doubly toothed, the terminal lobes triangular and larger than the side ones; veins and stalks usually red. Flowers greenish white, in drooping slender racemes 2½ to 4 inches long. Fruits smooth, numerous, in drooping racemes; key one-half to three-fourths inch long; wings rounded at the end, one-fifth inch wide, spreading at an angle of 120° to almost horizontal.

"Native of Japan, introduced to cultivation by Prof. Sargent, who found fruiting trees in Japan in October, 1892, and sent young trees to Kew a year or two later. It has proved hardy. It is one of the handsome group with striated branches, including *A. pennsylvanicum* and *A. rufinerve*, to both of which it is closely allied and bears much resemblance in shape of leaf, but is readily distinguished by the absence of down on leaf, young wood, and flower stem." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 136 and 137.*)

39983 to 39998—Continued.

39989 to 39991. Betula spp. Betulaceæ. **Birch.**

39989. Betula schmidtii Regel.

Wilson No. 7687, from the Province of Shimotsuke, Hondo, around Lake Chuzenji, at an altitude of 1,200 to 1,600 meters. October 20, 1914.

"A tree 30 to 35 meters tall, girth 2.1 to 3 meters. This is a well-marked species characterized by the narrow but stiff erect catkins and by the fine denticulations of the short-petioled leaves. The bracts are rather short, with obtuse or acute lobes, the middle one being twice longer than the erect lateral lobes. This remarkable birch is rare in Japan, and I saw it only on the wooded shores of Lake Chuzenji and in the ascent there from Nikko. It is a large tree, with thick branches and black bark which falls off in thick, rather small plates of irregular shape." (*Plantae Wilsonianae, vol. 2, p. 475–476.*)

39990. Betula japonica kamtschatica (Regel) Winkler.

Wilson No. 7669, from the Province of Shimotsuke, Hondo, around Yumoto, on Senjogahara, October 19, 1914.

" Slender tree, 8 to 20 meters tall, girth 0.3 to 0.9 meter, bark pure white, common, fruit pendulous." (*Plantae Wilsonianae, vol. 2, p. 487.*)

39991. Betula grossa Sieb. and Zucc.

Wilson No. 7680, from the Province of Shimotsuke, Hondo, around Lake Chuzenji, October 21, 1914.

" *Yoguro-minebari.* A tree 20 to 25 meters tall, girth 2.1 to 3 meters, fruit erect." (*Plantae Wilsonianae, vol. 2, p. 477.*)

39992. Juniperus litoralis Maxim. Pinaceæ. **Juniper.**

Wilson No. 7740.

Distribution.—A prostrate shrub found along the sandy shores of the islands of Japan.

39993. Acanthopanax sciadophylloides Franch. and Savat. Araliaceæ.

Wilson No. 7649.

A tall, glabrous shrub with alternate branches. Leaves alternate, long petiolate (12 to 25 cm.), digitately five parted; the upper often three parted or occasionally simple. Leaflets long petiolate (1 to 3 cm.), ovate from a rounded or slightly attenuate base, slightly acuminate at the apex, sharply denticulate, pale green above, somewhat glaucous beneath. Flowers white, arranged in more or less dense panicles. Japan. (Adapted from *Franchet et Savatier, Enumeratio Plantarum Japonicarum, v. 2, p. 378. 1879.*)

39994 and 39995. Larix spp. Pinaceæ. **Larch.**

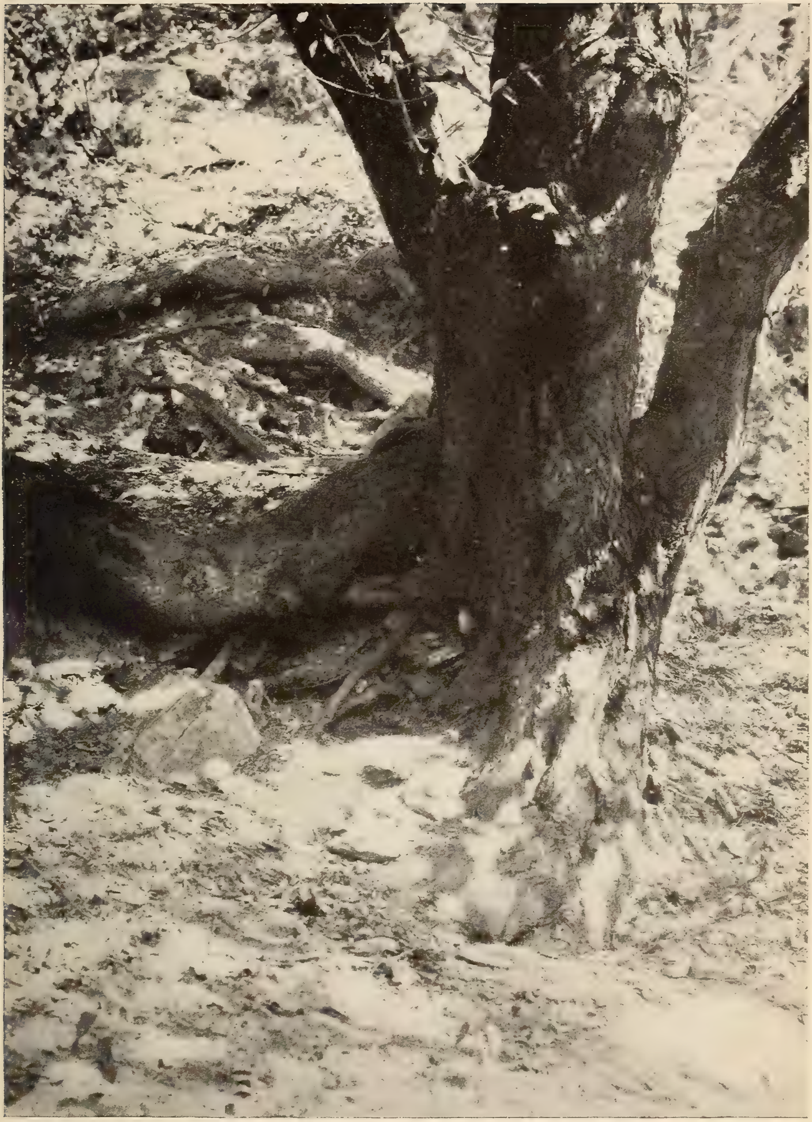
39994. Larix kurilensis Mayr.

Wilson No. 7328.

See S. P. I. No. 35171 for previous introduction and description.

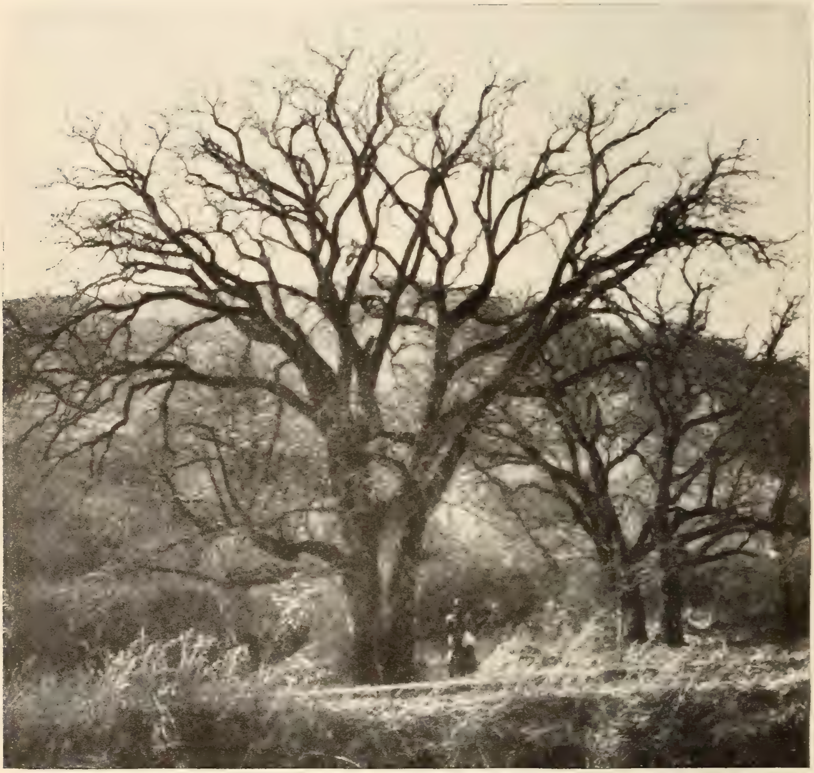
39995. Larix dahurica principisrupprechtii (Mayr) Rehd. and Wilson.

The Korean larch.



TRUNK OF POTANIN'S PEACH (AMYGDALUS PERSICA POTANINI, S. P. I. NO. 40007).

A wild peach of the type of *A. davidiana*, but seldom growing so large; maximum 30 feet. Occurs at altitudes of 4,000 to 7,000 feet in side valleys, especially in well-sheltered warm mountain pockets. Its fruits are not edible, but as a stock for stone fruits it may prove more drought resistant even than *davidiana*. Its behavior on a hillside location is shown in the illustration. Photographed by Frank N. Meyer, October 29, 1914 (P12108FS).



A HARDY WILD PEAR TREE IN KANSU, CHINA (PYRUS SP., S. P. I. NO. 40019).

This remarkable wild pear, according to Rehder, stands close to if it is not identical with *Pyrus ussuriensis,* which has aroused so much interest because of its resistance to pear blight. It occurs in the mountains at altitudes of 8,000 feet in company with the Siberian crab, *Populus tremula,* and *Picea obovata,* all northern plants. Though the fruits from the wild tree are hard, acrid, and inedible, the species appears to have given rise to cultivated forms of this pear, which, unlike the true Chinese pear (*Pyrus sinensis*), are melting in character and not hard and gritty. As a stock or for breeding purposes such a vigorous wild pear can hardly fail to be of value. Photographed by Frank N. Meyer near Tchenyatau, Kansu, December 1, 1914 (P12129FS).

39983 to 39998—Continued.

> "The typical form of *L. principis rupprechtii* as represented by the specimens from Wutaishan (collected by Purdom and Meyer) looks quite distinct from typical *L. dahurica*, but the specimens from Weichang, together with others from Manchuria, Amurland, and Korea, form a series which gradually merge into typical *L. dahurica*. With *L. sibirica* Ledebour, with which it has been compared, it agrees only in the size of its cones, but differs in their perfectly glabrous, more spreading, and thinner scales not incurved on the margin, truncate, or (particularly in the Weichang specimens) even emarginate at the apex, and in the more conspicuous bracts which are often, particularly in the lower part of the cone, more than half as long as the scales; in all these characters *L. principis rupprechtii* agrees with *L. dahurica*, and it seems therefore best to consider it a variety of this species, distinguished by the more numerous scales. Purdom and also Meyer speak of this larch as forming forests on the northern slopes of Wutaishan and in its neighborhood where, according to Meyer, the snow does not melt until well into May. In the Weichang region Purdom remarks that the tree is now becoming very scarce." (*Rehder and Wilson, Plantae Wilsonianae, vol. 2, p. 21, 1914.*)

39996. PICEA KOYAMAI Shirasawa. Pinaceæ. **Spruce.**

Wilson No. 7528.

A small, cone-shaped Japanese spruce, up to 10 m. (32½ feet) high; the trunk reaches a diameter of 25 cm. (10 inches). The young trees present an appearance similar to those of *P. excelsa*. Young twigs reddish brown, smooth; buds cone shaped, short; scales brown, covered with resin; needles short, thick, obtuse, four sided, standing thickly and obliquely on the twigs; straight or often somewhat bowed, 7 to 13 mm. (one-fourth to one-half inch) long, seeming blue-white from a distance. Cones elliptic oval, obtuse, brownish yellow-green, 3.5 to 6 cm. (1.4 to 2.4 inches) long, 2.5 cm. (1 inch) broad. (Adapted from *H. Shirasawa, Mitteilungen der Deutschen Dendrologischen Gesellschaft, p. 254, 1914.*)

39997. TAXUS CUSPIDATA Sieb. and Zucc. Taxaceæ. **Yew.**

Wilson No. 7778.

For previous introduction and description, see S. P. I. No. 39861.

39998. VIBURNUM FURCATUM Blume. Caprifoliaceæ.

Wilson No. 7624.

"A native of Japan and China. This also has the showy sterile marginal flowers, but its stems are more uniformly erect. It differs also in the shorter stamens, which are only half the length of the corolla, and in the shape of the furrow in the seed. It succeeds in gardens no better than *V. alnifolium*, although there was a healthy plant at Abbotsbury, near Weymouth, a few years ago. It is a native of northern Japan at low levels and of the mountainous parts of the south. The foliage turns brilliant scarlet to reddish purple in autumn. It is a bush 12 or more feet high in a wild state." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 642.*)

Distribution.—The Provinces of Hupeh and Szechwan in China and on Sakhalin Island and in Japan.

39999. QUERCUS sp. Fagaceæ. Oak.

From Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received March 5, 1915.

Selected from a lot of *Quercus insignis.*

40000 to 40039.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 2, 1915. Quoted notes by Mr. Meyer, except as otherwise indicated.

40000 to 40006. AMYGDALUS spp. Amygdalaceæ. Peach.

40000. AMYGDALUS PERSICA L.
(*Prunus persica* Stokes.)

"(No. 2138a. July to November, 1914.) Cultivated and escaped peaches, collected along the roadsides in the Chinese Provinces of Honan, Shansi, Shensi, and Kansu at various altitudes. To be sown to obtain new types, possibly."

40001 to 40006. AMYGDALUS spp.

40001. "(No. 2139a. Sianfu, Shensi, China. August 30, 1914.) Wild peaches having larger fruits than the ordinary wild ones, said to come from near Tzewu, to the south of Sianfu, but some also probably collected from trees in gardens which were raised from wild seeds. When seen wild this peach generally assumes a low bush form of spreading habit; when planted in gardens and attended to, it grows into a small tree, reaching a height of 12 to 20 feet, with a smooth trunk of dark mahogany-brown color. The leaves are always much smaller and more slender than in cultivated varieties, while their color is much darker green. They seem to be somewhat less subject to various diseases than the cultivated sorts, and they are most prolific bearers, although the fruit is of very little value, on account of its smallness and lack of flavor. In gardens around Sianfu this wild peach is utilized as a stock for improved varieties. It is also grown as an ornamental; said to be literally covered in spring with multitudes of shell-pink flowers. See also No. 2123a [S. P. I. No. 39428]."

40002. "(No. 2140a. Tsing Range, Shensi, China. September, 1914.) Wild peaches, occurring in the foothills of the higher mountains at altitudes of 2,000 to 5,000 feet, generally found at the edges of loess cliffs and on rocky slopes. There is a great deal of variation to be observed as regards size and shape of leaves, density of foliage, and general habits."

40003. "(No. 2141a. Near Paichiatien, near Fenghsien, Shensi, China. September 17, 1914.) Wild peaches found on a mountain side, at an altitude of 4,000 feet; these small trees and bushes had borne such a heavy crop that the ground beneath them was covered with a layer, a few inches thick, of the small, yellowish, hairy fruits. The local inhabitants didn't consider them worth collecting even, and they were rotting and drying up."

40004. "(No. 2142a. Kagoba (south of Hsiku), Kansu, China. October 3, 1914.) Wild peaches occurring as tall shrubs in loess cliffs at the Tibetan frontier at altitudes of 6,000 to 8,000

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

feet. Save for some children who eat these wild peaches, they are otherwise considered worthless wild fruit. Local name *Yeh t'ao,* meaning 'wild peach,' and *Mao t'oa,* meaning 'hairy peach.'"

40005. "(No. 2143a. Near Kwatsa (on the Hsiku River), Kansu, China. November 10, 1914.) Wild peaches found on stony mountain slopes in a wild, very sparsely populated country. No fruit trees whatsoever are cultivated by the local settlers in the mountains, and the way some of these peach bushes grow excluded them from ever having been brought there by any man or even any quadruped; only birds might have transported them."

40006. "(No. 2144a. Tchutsaitze (near Hsiku), Kansu, China. November 2, 1914.) Wild-growing peach of tall, bushy growth, having the looks and habits of a type midway between the wild peach and Potanin's peach. Collected at an altitude of 4,500 feet, at the foot of a dry mountain."

40007 to 40009. Amygdalus persica potanini (Batal.) Ricker. Amygdalaceæ.
(*Prunus persica potanini* Batal.)

40007. "(No. 2145a. Tchutsaitze (near Hsiku), Kansu, China, October 29, 1914.) Potanin's peach, collected at an altitude of 4,300 feet. Scions sent under No. 1223 [S. P. I. No. 39899], which see for further remarks."

For an illustration of the trunk of this peach tree as found growing in China, see Plate VII.

40008. "(No. 2146a. Near Tchutsaitze (near Hsiku), Kansu, China, November 3, 1914.) A variety of Potanin's peach having very much larger stones than the ordinary variety. Collected at an altitude of 6,000 feet. Of value especially as a stock for stone fruits; also recommended as an ornamental spring-flowering tree, especially for the drier parts of the United States."

40009. "(No. 2147a. Near Paoji (near Hsiku), Kansu, China. November 9, 1914.) Potanin's peach, collected from mountain sides, where it is much cut for its fine straight shoots, which serve for pipestems and for whip butts. Altitude, 7,000 feet."

40010 and 40011. Amygdalus tangutica (Bat.) Korsh. Amygdalaceæ.
(*Prunus tangutica* Koehne.)

40010. "(No. 2148a. Lantsai (near Hsiku), Kansu, China. October 29, 1914.) The Tangutian almond, collected at an altitude of 4,200 feet. Scions sent under No. 1222 [S. P. I. No. 39898], which see for further notes."

40011. "(No. 2149a. Near Kiucheng (New Taochow), Kansu, China, November 27, 1914.) The Tangutian almond, collected along the banks of the Tao River, at an altitude of 9,450 feet. It was here that the Russian traveler G. N. Potanin obtained some of his material in 1885. For further remarks, see No. 1222 [S. P. I. No. 39898]."

40012 and 40013. Prunus armeniaca L. Amygdalaceæ. Apricot.

40012. "(No. 2150a. Near Lantsai (near Hsiku), Kansu, China. November 3, 1914.) Wild apricots, occurring very commonly in

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

the mountains at altitudes of 5,000 to 9,000 feet. The natives collect the stones, crack them, take the kernels out, and eat them, after having boiled them. They still taste bitter, however. Of use possibly in extending apricot culture farther north; also as stocks for stone fruits in semiarid regions and as hardy spring-flowering park trees for the cooler parts of the United States."

40013. "(No. 2151a. Near Kwatsa (on the Hsiku River), Kansu, China. November 10, 1914.) Wild apricots, coming from a different district; otherwise the same remarks apply to them as to the preceding number."

40014 and 40015. Prunus spp. Amygdalaceæ. **Plum.**

40014. "(No. 2152a. Near Kwanyintang (between Paochi and Fenghsien), Shensi, China. September 15, 1914.) A wild plum, found on somewhat stony mountain slopes at altitudes between 4,000 and 5,000 feet. Grows into a tall bush, densely branched and often spiny on the young shoots. Fruits the size of a large marble, of yellowish green color, flavor very spicy, although sour near the skin and the stone. Of value possibly to supply compotes and for breeding experiments."

40015. "(No. 2153a. Kagoba (south of Hsiku), Kansu, China. October 31, 1914.) A wild plum, growing into a tall bush or even a small tree, found on sloping stretches of loess land at the foot of mountains near the Tibetan frontier at altitudes of 6,000 to 8,000 feet. Of value possibly, like the preceding number."

40016. Juglans regia L. Juglandaceæ. **Walnut.**

"(No. 2145a. Hsiku, Kansu, China. October 26, 1914.) Wild walnuts, growing on sheltered mountain sides and in narrow valleys at altitudes of 5,000 to 8,000 feet. There is some variation in the size and quality of nuts from various trees, but in general these wild walnuts are small, hard shelled, and not sweet. The trees may, however, be much hardier than the Persian strain of walnuts, and possibly they could be utilized in extending walnut culture farther north."

40017 and 40018. Cephalotaxus drupacea sinensis Rehd. and Wilson. Taxaceæ.

40017. "(No. 2155a. Near Kwanyintang (between Paoki and Fenghsien), Shensi, China. September 15, 1914.) An evergreen conifer, growing into a tall shrub or rarely into a gnarled small tree. Resembles in general habits *Cephalotaxus fortunei*, but of denser, less open growth, especially beautiful when young, or two or three years after it has been cut down to the ground; for this plant throws up sets of new shoots more compact in growth than the original stems. It withstands a great amount of shade, and thrives even among bowlders and stony débris. Of value as an ornamental evergreen, especially for shady places, for those parts of the United States where the winters are not too severe. Collected at an altitude of 4,000 feet."

40018. "(No. 2156a. Near Kwatsa (on the Hsiku River), Kansu, China. November 10, 1914.) The same as the preceding number [40017], but coming from a different locality; collected at 5,000 feet altitude. Locally this shrub is called *Shui pei shu*, meaning 'water conifer.' Its seeds are collected by the people and eaten

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

boiled, apparently to remove a poisonous principle. They are rich in oil, but taste bitterish even after having been boiled. Of value like the preceding number."

40019. Pyrus ussuriensis Maxim. Malaceæ. **Pear.**

"(No. 2157a. Near Tchenyatau (near Titao), Kansu, China. December 1, 1914.) A species of wild pear, growing to be a large tree, with a wide-spreading, dense head of branches. Bark of dark color and in the main trunk even blackish and deeply furrowed in old specimens. Young branches often ferociously spiny and especially so in suckers. Leaves small and with much shorter peduncles than in *Pyrus chinensis.* Fruits globose, flattened. Calyx persistent, peduncle generally short; much variation exists as regards size, but the fruits of this species of pear are generally small; the flesh is also acrid and often quite hard, though some of the larger ones are edible after having been frozen. This pear is not found in the warm valleys, but it thrives best at altitudes of about 8,000 feet, in company with such hardy trees and shrubs as *Picea obovata, Populus tremula, Malus baccata, Hippophaë rhamnoides, Syringa amurensis, Rhamnus dahurica, Sorbaria sorbifolia,* and others. This pear has apparently given rise to some locally cultivated forms bearing small, sour fruits, which are juicy, however, and melting, and not hard and gritty, like the poorer strains of *P. chinensis.* Of undoubted value as a stock for pears in cold sections and as a factor in breeding experiments in trying to extend successful pear culture farther northward."

For an illustration of this hardy pear tree as found growing in China, see Plate VIII.

40020. Malus sp. Malaceæ. **Crab apple.**

"(No. 2158a. Lienhuashan (near Taochow), Kansu, China. November 30, 1914.) A peculiar species of crab apple of which scions were sent under No. 1249 [S. P. I. No. 39923], which see for further information."

40021. Sorbus sp. Malaceæ. **Rowan.**

"(No. 2159a. Lienhwashan (near Taochow), Kansu, China. November 30, 1914.) A species of rowan of tall, shrubby growth; found in somewhat shady places at altitudes of 8,000 to 10,000 feet. Leaves small and pinnate, berries of pale yellow color, in some species apparently white. Possessing a good flavor, though somewhat bitter; of use, however, for preserves. This rowan is of value possibly as a tree for the home garden, especially for the cooler sections of the United States."

40022. Ribes alpestre giganteum Janczewski. Grossulariaceæ. **Gooseberry.**

"(No. 2160a. Near Yangsa (near Titao), Kansu, China. November 29, 1914.) A very spiny wild gooseberry, with quite elongated fruits. Collected at an altitude of more than 9,000 feet. For further information, see No. 1241 [S. P. I. No. 39916]."

For an illustration of this tall-growing bush as found in China, see Plate VI.

40023. Prinsepia uniflora Batalin. Amygdalaceæ.

"(No. 2161a. Near Sanszemiau (near Taochow), Kansu, China. December 1, 1914.) A fruit-bearing, spiny shrub, suggested as a possible

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

new fruiting bush for the semiarid sections of the United States, collected at an altitude of 6,500 feet. See also remarks under No. 2127a [S. P. I. No. 39432]."

40024. Diospyros lotus L. Diospyraceæ. **Persimmon.**

"(No. 2162a. Hsiku, Kansu, China. October 20, 1914.) A variety of *Ghoorma* persimmon, with fruits much larger than the ordinary sort; shape also different, being flattened globose; color yellow, changing later on into blackish. Taste much like a *kaki*, making one think that *D. lotus* possibly could be developed into a promising fruit-bearing tree adapted especially for mild-wintered semiarid regions."

40025. Schizandra sphenanthera Rehd. and Wilson. Magnoliaceæ.

"(No. 2163a. Paoki, Shensi, China. September 12, 1914.) A perennial woody vine of slender growth, found between tall scrub in shady places; foliage not unlike that of *Actinidia kolomikta*, but somewhat thinner and with red petioles. The carmine-red berries are borne in small spikes on fleshy stalks, and they hang down gracefully; these berries are the size of currants; they possess a subacid, spicy, aromatic taste, somewhat too pronounced to make it acceptable right away to most Caucasian people. The Chinese eat them much and claim they purify the blood and dislodge waste matter from the body. By selection better varieties could be obtained, no doubt, which might prove to be quite acceptable to the western palate. This vine deserves to be experimented with for the following purposes: As an ornamental cover vine for shady places, as a possible new fruiting vine to be grown on trellises on northern exposures, and as a medicinal plant having apparently some value as a blood cleanser. Chinese name *Wu wei tzŭ*, meaning 'fruit of five tastes.'"

40026. Vitis sp. Vitaceæ. **Grape.**

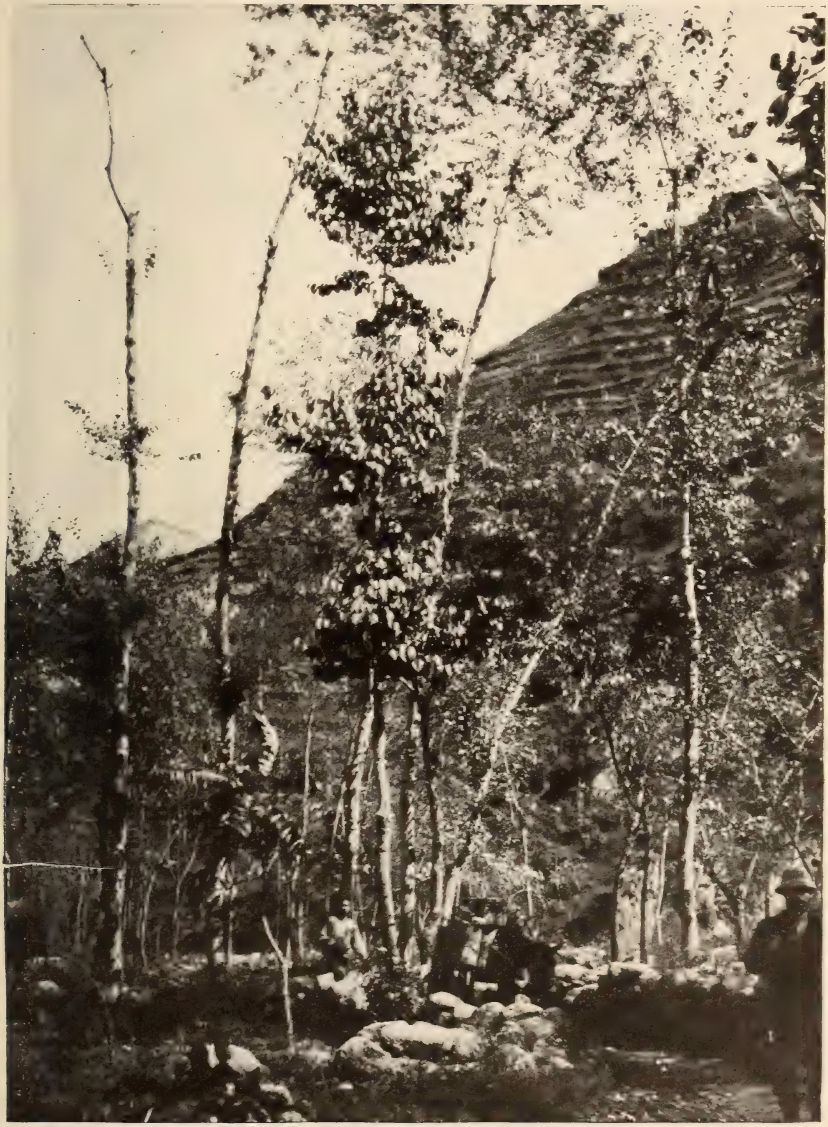
"(No. 2164a. Near Kwanyintang (between Paoki and Fenghsien), Shensi, China. September 15, 1914.) Wild grapes, overrunning tall scrub and trees on mountain sides at altitudes between 3,000 and 5,000 feet. The small bunches of blackish blue berries are collected by the people and eaten, but no attempts seem to be made to domesticate these wild grapes. Of value possibly in breeding experiments, as stocks, and as ornamental cover vines for pergolas, etc. There may be several distinct forms among these seeds."

40027. Dipelta yunnanensis Franchet. Caprifoliaceæ.

"(No. 2165a. Near Paoji (near Hsiku), Kansu, China. November 6, 1914.) A shrub of the appearance of a Lonicera when seen in winter, but bearing triangular winged fruits. Cuttings sent under No. 1229 [S. P. I. No. 39905], which see for further information."

40028. Eucommia ulmoides Oliver. Trochodendraceæ. **Tuchung.**

"(No. 2166a. Huihsien, Kansu, China. September 28, 1914.) A Chinese caoutchouc tree, found wild on densely forested mountain slopes in southwestern Shensi and southeastern Kansu; also much cultivated in gardens and here and there planted along roadsides. This tree has the peculiar property of exhibiting rubberlike threads of shining whitish color whenever pieces of bark or leaf are snapped across, but it shows this peculiarity strongest of all in its winged fruits, which fact is often shown by the Chinese to those who have never seen it before.



A HARDY GUM-PRODUCING TREE IN KANSU, CHINA (EUCOMMIA ULMOIDES, S. P. I. No. 40028).

The Tu chung or Shih mien shu tree of Kansu is planted with poplars along roadsides, and its long slender stems are used for house building. It grows to 80 feet in height, preferring shelter from other trees. It has proved hardy at Washington. Its bark and leaves contain a peculiar gum, which as yet has been imperfectly investigated by chemists, but which among the Chinese is highly prized. The ground-up bark is given as a heart stimulant, and is said to especially benefit confirmed opium smokers. Photographed by Frank N. Meyer near Fuorryi, Kansu, October 7, 1914 (P12164FS).

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

They call this tree on this account *Shih mien shu*, meaning 'stone cotton tree,' reference being made apparently to the resemblance of this caoutchouc or rubber to asbestos. The bark of this Eucommia is a valuable drug, used as a heart stimulant and said to benefit especially those whose hearts have become affected by overindulgence in opium. The bark is called *Tu chung*, meaning 'heart's ease,' and the tree also passes under that name, although in Shensi and Kansu the name *Shih mien shu* is the one commonly used. It seems that the bark is mostly taken from trees that are from 7 to 12 years old. Here and there the Chinese have taken advantage of the rapid growth the Eucommia makes when young, and they have planted them along roadsides, together with poplars. The long, slender, and straight stems are used for house-building purposes. This tree reaches a height of 80 feet, but it seems to grow best when sheltered by other trees. Of value as a quick-growing ornamental tree for parks in those sections of the United States where the winters are not too severe. It also might be planted in plantations, after careful inquiries have been made as to the amount of bark China could take annually, and its bark exported to China. Obtained from the garden of the Belgian Roman Catholic missionaries in Huihsien."

"A deciduous tree, not yet found by Europeans in a wild state, but from 20 to 30 feet high, as seen cultivated by the Chinese. It probably reaches a large size. Leaves alternate, ovate to oval, long and slender pointed, toothed, 2 to 8 inches long, slightly hairy on both surfaces when young, becoming smooth above. Flowers unisexual, the sexes on separate trees; they are inconspicuous, the males consisting of brown stamens only; female ones not seen by me. Fruit flat and winged, 1-seeded, rather like an enlarged fruit of wych-elm, oval oblong, 1½ inches long, tapering at the base into a short stalk, apex notched.

"Introduced to France from China about 1896, and a few years later to Kew, where several plants raised from the original plant (a male) are 15 to 20 feet high and have several times flowered. It was first discovered in China by Henry as a cultivated tree, 20 to 30 feet high, but as its bark is and has been for 2,000 years highly valued by the Chinese for its real or supposed tonic and other medicinal virtues, it is never allowed to reach its full size, but is cut down and stripped of its bark. To Europeans the most interesting attribute of this tree is its containing rubber. What its commercial value may be is doubtful; the rubber is apparently of inferior quality, but the tree is of peculiar interest, as the only one hardy in our climate that is known to produce this substance. If a leaf be gently torn in two, strings of rubber are visible. At Kew, grown in good loam, it has proved absolutely hardy and a vigorous grower; it can be propagated by cuttings made of half-ripened wood put in gentle heat. Wilson introduced seeds to the Coombe Wood nursery, from which, no doubt, trees of both sexes have been raised. Some authors place it in the witch-hazel family." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 534–535.*)

For an illustration of these gum-producing trees as found growing in China, see Plate IX.

40029. TRACHYCARPUS EXCELSUS (Thunb.) Wendl. Phœnicaceæ. Palm.

"(No. 2167a. Huihsien, Kansu, China. September 28, 1914.) The Chinese fan or coir palm, cultivated in gardens in southern Shensi and southern Kansu as an ornamental tree, reaching a height of 30 to 40

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

feet. Withstands successfully winter temperatures, unprotected, of —12° C. (+11° F.), as happened in Huihsien on November 1, 1895, when all the other palms around there died. Of value as a fine ornamental garden and park tree for all parts of the United States where the mercury does not go much below 10° F. Chinese name *Tsung shu*, meaning 'coir palm tree.' Obtained like the preceding number, 2166a [S. P. I. No. 40028]."

40030. ABELMOSCHUS MANIHOT (L.) Medic. Malvaceæ. **Hibiscus.**
(*Hibiscus manihot* L.)

"(No. 2168a. Near Tsaichiapu, Shensi, China. September 9, 1914.) A species of Hibiscus, with many large flowers of clear yellow color; cultivated here and there on fertile flats along the Wei River as a vegetable. The petioles of the flowers, just before they expand, are picked and also the young tops; these are dried in the wind or in the sun and when dry, ground into a powder, which is sprinkled over flour noodles to make them more gelatinous, or it is added to soups and sauces to make them mucilaginous. The taste of this powder is slightly subacid, and not unpleasantly so. Possibly a good jelly could be made from it. Chinese name *Chih ts'ao*."

40031. ASPARAGUS TRICHOPHYLLUS FLEXUOSUS Trautv. Convallariaceæ.

"(No. 2169a. Near Yangsa (near Titao), Kansu, China. November 30, 1914.) An asparagus of trailing habits and having spiny bracts; found wild among low scrub in a loess bank. Apparently rare. Of value possibly in breeding experiments and as a trailing garden perennial."

40032. ALANGIUM CHINENSE (Lour.) Rehder. Cornaceæ.
(*Marlea begonifolia* Roxb.)

"(No. 2170a. Near Yuyinchen (between Liangtang and Huihsien), Kansu, China. September 26, 1914.) A shrub or small tree, belonging to the Cornaceæ, bearing leaves of many forms, some being very large and of lop-sided, elliptical shape, while others have five points and are small, resembling leaves of *Liquidambar styraciflua*. Found in somewhat damp places at the foot of embankments or along streams. Of value as a striking looking garden and park shrub for mild-wintered regions."

40033. OSTEOMELES SCHWERINAE Schneider. Malaceæ.

"(No. 2171a. Kwatsa (on the Hsiku River), Kansu, China. November 10, 1914.) A very dense-growing shrub, from 2 to 5 feet tall, having small, dark-green, finely pinnate leaves. Found on dry stony wastes and in rock cliffs. Bears small bluish black berries in the late fall of the year and is said to bloom profusely in early summer with conspicuous white flowers. Of value as a shrub for rockeries and as a lining bush along pathways running irregularly."

"An evergreen shrub, growing probably 6 to 8 feet high in the open, considerably more against a wall; the long, slender, flexible branchlets covered with short gray hairs. Leaves pinnate, 2 to 4 inches long, composed of 8½ to 15½ pairs of leaflets, covered, more especially beneath, with gray down; main stalk hairy, channeled above. Leaflets oblong-oval or obovate, with a short abrupt point, stalkless, one-quarter to five-eighths inch long, about one-third as wide. Flowers white, one-half to two-thirds inch diameter, produced in June in branching corymbs 1½ to 3 inches across, terminating lateral twigs; calyx lobes ovate-lanceo-

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

late, hairy outside, smooth within. Fruit egg shaped, one-fourth to three-eighths inch long, at first dark red, blue-black when ripe, smooth, crowned by the persistent calyx; 5-seeded.

"Native of Yunnan and other parts of China; originally raised in the Jardin des Plantes at Paris from seed which had been sent from Yunnan by the Abbé Delavay in 1888; introduced to Kew in 1892. Forms nearly allied to this Chinese plant occur throughout the southeast Pacific region as far as the Sandwich Islands and New Zealand. The whole were at first included under *O. anthyllidifolia* Lindley, but the west Chinese plant has been separated on the strength of its smooth fruit, less hairy calyx lobes, and usually but not always narrower leaves, thus leaving Lindley's name for the tropical and subtropical woolly fruited plants. They are extremely closely allied, but perhaps the latter could not be grown out of doors with us.

"*O. schwerinae* is a shrub of distinct appearance, its foliage very suggestive of some of the Leguminosæ; it is also very elegant in habit and attractive in blossom. But we do not find it hardy in the open, although it survives mild winters. It makes a very delightful wall plant. It can be increased by cuttings made of moderately ripened wood placed in gentle heat. Seed ripens only in favorable years." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 113.*)

40034. POLYGONUM sp. Polygonaceæ.

"(No. 2172a. Tung Tung (near Tangchangpu), Kansu, China. November 19, 1914.) A Polygonum of slender woody growth; a vine, found on open places here and there, covering often whole blocks of scrub or rocky cliffs with its masses of showy white flowers, which appear in late summer and are produced in the greatest profusion. Foliage relatively small and resembling leaves of buckwheat. Able apparently to withstand much drought and adverse conditions. Of decided value as a porch, arbor, pergola, and trellis vine for the greater part of the United States. Collected at an altitude of 5,000 feet."

40035 and 40036. CASTANEA sp. Fagaceæ. **Chestnut.**

40035. "(No. 2173a. Huihsien, Kansu, China. September 28, 1914.) A species of chestnut of medium tall growth; trunk more slender, and bark smoother than in *C. mollissima*, while the leaves, burs, and nuts are smaller. Loves apparently shady situations and damp soil. Of value as a nut-bearing tree, especially for the southeastern United States. Obtained like No. 2166a [S. P. I. No. 40028]."

40036. "(No. 2174a. Chenghsien, Kansu, China. October 4, 1914.) A species of chestnut, said to occur wild in the mountains; apparently the same as the preceding number, 2173a [S. P. I. No. 40035]. Where these chestnuts grow in gardens one also finds some of the following trees, showing how mild the climate is: *Ligustrum lucidum, Trachycarpus* (*Chamaerops*) *excelsus, Hovenia dulcis, Diospyros kaki, Punica granatum, Phyllostachys bambusoides* (*P. quilioi*), etc."

40037. AESCULUS WILSONII Rehder. Æsculaceæ. **Horse-chestnut.**

"(No. 2175a. Chishan, near Chenghsien, Kansu, China. October 1, 1914.) A Chinese horse-chestnut growing into a large tree with an enormous spread of head. Of value as a beautiful shade tree, especially

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

for those parts of the United States where the winters are not too severe. Collected in a temple compound at an altitude of 6,000 feet."

"This beautiful tree has been usually confused with *A. chinensis* Bunge, which differs in its nearly glabrous short-petiolulate leaves sparingly pilose only on the veins below and cuneate at the base, in the smaller flowers and chiefly in the subglobose slightly depressed fruit truncate and slightly impressed at the apex, with thick walls, in the dry fruit 3 to 4 mm. thick, and in the smaller seeds with the hilum occupying one-half or more than one-half of the surface of the seed. It is also closely allied to *A. indica* Colebrooke, which differs in its larger flowers with much broader petals, in the inflorescence with less crowded ascending ramifications, and in the cuneate glabrous leaflets; *A. punduana* Wallich, which more resembles our species in its inflorescence and flowers, is easily distinguished by its very short-stalked cuneate and glabrous subcoriaceous and indistinctly serrulate leaflets." (*Sargent, Plantae Wilsonianae, vol. 1, p. 499.*)

40038. QUERCUS sp. Fagaceæ. **Oak.**

"(No. 2176a. Near Yaopuko (near Chenghsien), Kansu, China. October 6, 1914.) An oak, having medium large, somewhat undulate leaves; grows up into a medium-sized tall tree with a dense head of foliage. Of value as a shade and timber tree for those sections of the United States where the winters are not very severe. Collected at an altitude of 3,500 feet."

40039. CITRUS sp. Rutaceæ.

"(No. 2178a. Lianjapa (near Hsiku), Kansu, China. October 19, 1914.) A peculiar species of citrus of which scions were sent under No. 1221 [S. P. I. No. 39897], which see for further information."

For an illustration of this interesting fruit, see Plate III.

40040 to 40064.

From Sydney, New South Wales. Presented by Mr. J. H. Maiden, Botanic Gardens. Received February 18, 1915. A collection of proteaceous shrubs and trees recommended for trial in the United States.

40040. CONOSPERMUM TAXIFOLIUM Smith. Proteaceæ.

An erect twiggy shrub, with its stem and few branches more or less pubescent, sometimes glabrous. Leaves numerous, scattered, rigid, from one-half to three-fourths of an inch long, linear lanceolate, with a very sharp point. The peduncles are axillary, arising singly from several of the upper leaves, so that taken collectively they form a sort of corymb. Each peduncle is simple or forked, pubescent, furnished with remote, ovate bracts, and terminated by several sessile, pubescent, whitish flowers. (Adapted from *Curtis's Botanical Magazine, pl. 2724.*)

Distribution.—Along streams and near the coast in New South Wales and Queensland, and in Tasmania.

40041 to 40046. GREVILLEA spp. Proteaceæ.

40041 and 40042. GREVILLEA BANKSII R. Brown.

40041. Var. *Alba.* "An evergreen shrub or tree, 12 to 20 feet high. Queensland." (*Guilfoyle, Australian Plants, p. 193.*)

40040 to 40064—Continued.

40042. Received as var. *forsteri*, but *forsteri* is a red-flowered variety of *G. robusta*. This plant on flowering proves to be *G. banksii*.

40043. GREVILLEA CALEYI R. Brown.

Distribution.—A slender shrub about 6 feet tall with handsome pinnately divided leaves which are softly villous underneath and with short racemes of beautiful small red flowers, found in the vicinity of Port Jackson in New South Wales.

40044. GREVILLEA HILLIANA F. Mueller. **Silky oak.**

An Australian tree 50 to 60 feet high and 2 to 3 feet in diameter. Leaves variable, ranging from entire, ovate oblong, 6 to 8 inches long to deeply pinnatifid with 5 to 7 oblong or lanceolate lobes several inches in length (the whole leaf then being more than 1 foot long), glabrous above, more or less silky pubescent beneath. Flowers white, small, and very numerous, in dense, cylindrical racemes, 4 to 8 inches long. (Adapted from *Maiden, Forest Flora of New South Wales, p. 53.*)

40045. GREVILLEA LAURIFOLIA Sieber.

Distribution.—A low or trailing shrub with silky tomentose branches and broadly lanceolate leaves which are smooth above and silky below and with short racemes of small flowers, found on the slopes of the Blue Mountains in New South Wales.

40046. GREVILLEA TRITERNATA R. Brown.

Distribution.—An erect bushy shrub with finely divided leaves having narrow, sharp-pointed segments and terminal racemes of small flowers; found along mountain streams in New South Wales.

40047 to 40053. HAKEA spp. Proteaceæ.

"Drought-resistant plants which endure moderate frosts and are therefore well adapted to the drier parts of the South and Southwest. In California they are grown as far north as Sacramento. One of these, *H. laurina*, produces strikingly handsome flowers; *H. elliptica* is prized for the bronze color of its young foliage; while the spiny leaved species are serviceable for planting in public parks or in any place where it is necessary for shrubs to protect themselves from pedestrians or vandals.

"Hakeas may be propagated by cuttings taken from ripened shoots, but they are almost universally grown from seeds. These are gathered from year-old capsules, which are very hard and must be dried for some time before they will open. The seeds are sown in winter or early spring in the ordinary mixture of sand, leaf mold, and loam; they germinate easily, even without heat. The young seedlings are pricked off into boxes and held in the lath house for a season before planting in the open. For best results Hakeas should be grown in light well-drained soil and need but little water after they are once established; much moisture is injurious except during the summer months." (*Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1427–1428.*)

40047. HAKEA ACICULARIS (Vent.) Knight.

Distribution.—A tall shrub or small bushy tree with cylindrical, sharp-pointed leaves 1 to 3 inches long and white flowers, found from Port Jackson to the Blue Mountains in New South Wales.

40040 to 40064—Continued.

40048. HAKEA DACTYLOIDES (Gaertn.) Cav.

Distribution.—A tall shrub with erect branches, narrow 3-nerved leaves 2 to 4 inches long, and small white flowers in axillary clusters, found along streams in New South Wales.

40049. HAKEA GIBBOSA (Smith) Cav.

Distribution.—A shrub with cylindrical, sharp-pointed leaves 1 to 3 inches long and small white flowers in sessile, axillary clusters, found in the vicinity of Port Jackson in New South Wales.

40050. HAKEA LEUCOPTERA R. Brown.

"This plant is commonly known as the *needle bush* or *pin bush*, and from its fleshy roots a good drinking water can be obtained in the arid regions in which it grows. A circle a few inches deep is dug around the base of the tree; the roots, which run horizontally, are soon discovered. They are divided from the tree and torn up, many of them being several feet in length. They are then cut into pieces, each about 9 inches long, and placed on end in a receiver; and good, clear, well-tasting water is obtained. The timber obtained from this tree is coarse grained and soft; it takes a good polish and is sometimes used for tobacco pipes, veneers, etc. Specific gravity, 0.818." (*Maiden, Useful Native Plants of Australia.*)

"An evergreen shrub, 5 to 8 feet high, with white flowers." (*Guilfoyle, Australian Plants, p. 201.*)

40051. HAKEA MICROCARPA R. Brown.

Distribution.—A shrub up to 6 feet in height, with cylindrical leaves from 1 to 4 inches long and bearing axillary clusters of white flowers with tubes 4 inches long, found in Tasmania and in New South Wales and Victoria, ascending the Australian Alps to an elevation of 6,000 feet.

40052. HAKEA PUGIONIFORMIS Cavanilles.

"Seeds of this plant were received among some of the first arrivals from Botany Bay. It is a free grower and attains a height of 4 or 5 feet, forming a handsome greenhouse shrub and producing plenty of flowers. These are odoriferous, and although not showy have a neat and lively appearance. It may be propagated by cuttings with facility. The most proper soil for it is a mixture of loam and peat. It is by no means a tender plant and merely needs protection from frost in the winter season. It usually blooms in the latter part of the summer." (*Loddiges's Botanical Cabinet, vol. 4, p. 353.*)

40053. HAKEA ULICINA CARINATA Mueller.

"Leaves usually linear lanceolate or linear, pungent, 4 to 8 inches long, prominently 1 to 3 nerved beneath; perianth and pedicels glabrous; fruit rarely above one-half inch long, with a short, straight beak. The foliage resembles the European furze." (*Bailey, Cyclopedia of American Horticulture.*)

Distribution.—A tall shrub found near Adelaide and on the Bugle Range in South Australia.

40054 and 40055. ISOPOGON spp. Proteaceæ.

40054. ISOPOGON ANEMONEFOLIUS (Salisb.) Knight.

Stem shrubby, 3 feet high, villous. Leaves scattered, rigid, nerved, smooth, erect, lengthened downward so as to resemble a

40040 to 40064—Continued.

long footstalk, branched at the upper part into about three pairs of pinnæ, the lowermost of which are longest and various forked at the end; points all armed with a callous reddish mucro or gland. Common flower solitary, globose, sessile. Calycine scales ovate acuminate, very woolly except the margin, completely imbricate, forming a globose cone stuffed with a fine white cottony substance. Corolla 1-petaled, tubed; tube longer than limb, which is 4-cleft, hairy, tortuose. Anthers linear, 2-lobed, sessile; style exserted, club shaped. Stigma conical, acute; the style and stigma have a singular appearance in this species, something like two cones with their bases applied together, but when the flowers first open these parts are so entirely covered with the pollen as to appear 4-sided. (Adapted from *Curtis's Botanical Magazine, pl. 697,* and *Johnson, Gardeners' Dictionary.*)

40055. Isopogon anethifolius (Salisb.) Knight.

Distribution.—A low shrub 3 to 4 feet high with leaves resembling those of dill (*Anethum graveolens* L.) and bearing conical heads of small yellow flowers, found from Port Jackson to the Blue Mountains in New South Wales.

40056. Lambertia formosa Smith. Proteaceæ.

"Another very striking plant was the Honey flower, with small, pointed glaucous leaves that could inflict a good sharp prick on marauding fingers. The Lambertia, which is said to be confined to this State, has numbers of heavy bell-shaped flowers of scarlet and pink that are usually sticky with a rank honey, much sought after by the pretty little honey eaters, who dip their long, curved bills deep down into these showy blossoms and thus help to propagate the species." (*H. M. Vaughan, An Australian Wander-Year, p. 72.*)

40057. Macadamia ternifolia F. Mueller. Proteaceæ.

Queensland nut.

See S. P. I. No. 18382 for previous introduction and description.

40058 to 40060. Persoonia spp. Proteaceæ.

40058. Persoonia angulata R. Brown.

Distribution.—A shrub with linear-lanceolate sharp-pointed leaves crowded on the erect branches and with small solitary axillary flowers, found on the slopes of the Blue Mountains in New South Wales.

40059. Persoonia media R. Brown.

Distribution.—A tall, erect shrub with elliptical, falcate leaves and small axillary flowers which are followed by dark-colored berries, found in the valley of the Brisbane River in Queensland and along the Hastings and Clarence Rivers in New South Wales.

40060. Persoonia myrtilloides Sieber.

Distribution.—A spreading shrub about 4 feet high with oblong-ovate leaves and small yellowish white flowers in the axils of the upper leaves, found in the Blue Mountains in New South Wales and at an altitude of 4,000 feet in the Nangatta Mountains in Victoria.

40061 and 40062. Petrophila spp. Proteaceæ.

40040 to 40064—Continued.

40061. Petrophila pulchella (Schrad.) R. Brown.

Stem shrubby, erect. Leaves alternate, filiform, twice or three times irregularly pinnate; leaflets unequal, divaricate when full grown and not unaptly resembling the antlers of a reindeer, whence it has been known by the name *rangiferina* among cultivators. Flowers white, collected into an oblong-ovate cone, terminal. Bracts obcordate acuminate, quite entire, imbricate, one to each corolla. Corolla 4-petaled; petals equal, adhering half way in the tube, but separating spontaneously when they fall off. Anthers oblong, attached without filament a little below the tip of the petal, as in the rest of the genus. Ovary surrounded with a white, hairy pappus, oblong, thickened at the base, and gradually tapering upward till it terminates in a style that is longer than the corolla, recurved, but after deflorescence erect. Stigma club shaped, hispid, and persistent. (Adapted from *Curtis's Botanical Magazine, pl. 796*, and *Johnson, Gardeners' Dictionary.*)

40062. Petrophila sessilis Sieber.

Distribution.—A white-flowered shrub 8 to 12 feet high, much resembling *P. pulchella*, but with the segments of the leaves more divaricate and the branches silky tomentose, found on the Blue Mountains in New South Wales and along Moreton Bay in Queensland.

40063. Stenocarpus sinuatus Endl. Proteaceæ.

As long ago as 1828 the lamented Allan Cunningham discovered this plant on the banks of the Brisbane River, Moreton Bay, with other interesting novelties. Not, however, meeting with the subject in flower, he took no further notice of it in his journal than to remark that "it is a slender tree, of most remarkable habit, with leaves large from the extremities of the branches, glossy and lobed, or lancinated." Had he seen its blossoms elegantly arranged in candelabrumlike bundles, clothed with the most vivid orange-scarlet silky pubescence, he would assuredly have ranked it amongst the most important of his numerous additions to the Australian flora. It is a plant constituting a small tree 16 feet or more high, with a slender trunk, branched, and bearing the ample and glossy evergreen foliage at the extremities of the branches. Leaves alternate, 1 to 2 feet in length, obovate lanceolate. Flowers umbellate; umbel compound; peduncles lateral from an old branch, or sometimes terminal. (Adapted from *Curtis's Botanical Magazine, pl. 4253*, and *Johnson, Gardeners' Dictionary.*)

40064. Telopea speciosissima (Smith) R. Brown. Proteaceæ.

"By many people this plant is known as the *tulip* or *native tulip.* It bears neither affinity nor resemblance to that flower and the name is probably a corruption of Telopea. This plant is known as the *waratah,* which is doubtless an aboriginal name, but its origin does not appear to be clear at the present time. It is a stout, erect, glabrous shrub 6 to 8 feet high bearing a strikingly handsome flower which has come to be recognized as the national flower of New South Wales. It lends itself in a remarkable degree to decorative treatment and hence is frequently depicted literally, or as a motif, in wrought iron, wood and stone carving, stained glass, and pottery decoration. The fruit is technically known

40040 to 40064—Continued.

as a follicle. One *waratah* flower (composed, of course, of a large number of individual flowers) matures, under favorable circumstances, 12 to 20 follicles. The *waratah* is found in the coast and mountain districts of New South Wales, from the Hunter River in the north to the Clyde and Braidwood district in the south. It is one of those plants which finds its southern limits where the sandstone formation ends; it does not pass over to the granite. It delights in rocky situations, and if it were not for the fact that it grows in the Blue Mountains and other coast ranges, frequently in very rough country, it would be threatened with extinction. This plant may be raised from seed, which readily germinates when fresh. The *waratah* is a plant which is coming increasingly into favor in private gardens, and under cultivation it attains a luxuriance unknown in its wild state. It is one of the most gorgeous of all subtropical plants under cultivation. Our experience with it is that it flowers the third year from seed. It is a stout, erect shrub of 6 to 8 feet, Leaves cuneate oblong or almost obovate, 5 to 10 inches long, mostly toothed in the upper part, tapering into a rather long petiole, coriaceous, penniveined with the midrib prominent, a few rarely quite entire. Flowers crimson, in dense ovoid or globular heads or racemes about 3 inches in diameter. Involucral bracts colored, ovate lanceolate, the inner ones 2 to 3 inches long, the outer ones few and small, surrounded by a dense tuft of floral leaves like the stem ones, but smaller and more entire. Bracts under the pairs of flowers very short; pedicels thick, recurved, one-fourth to one-half inch long. Perianth glabrous, nearly 1 inch long. Ovules 12 to 16, fruit recurved, 3 to 4 inches long. Seeds 10 to 20, the nucleus broad, obliquely quadrate, the wing obliquely truncate, one-fourth to one-half inch long." (*Maiden, Flowering Plants and Ferns of New South Wales, part 1, 1895.*)

40065. LITHOCARPUS CORNEA (Lour.) Rehd. Fagaceæ.

(*Quercus cornea* Lour.) **Evergreen oak.**

From Hongkong, China. Presented by Mr. W. J. Tutcher, Botanical and Forestry Department. Received March 6, 1915.

See S. P. I. No. 35320 for previous introduction and description.

40066 to 40068.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received March 4, 1915.

"Collected in Japan by Mr. E. H. Wilson."

40066. CLETHRA BARBINERVIS Sieb. and Zucc. Clethraceæ.

Wilson No. 7039.

"A deciduous shrub, 3 to 6 feet high in cultivation, more bushy and less erect than the American species; young shoots at first sprinkled with a minute starry down. Leaves often clustered at the end of the twig, oval or obovate, more tapering at the base than at the apex; 2 to 5 inches long, 1 to 2¼ inches wide; hairy at first on both sides, but especially so on the midrib and nerves beneath, toothed; stalk one-fourth to three-fourths inch long. Flowers white, one-third inch across, produced from July to September in a rather compact, terminal panicle 4 to 6 inches long, covered with white, starry down; calyx and seed vessel hairy; stamens smooth.

40066 to 40068—Continued.

"Native of Japan and China; introduced in 1870. It is a very pretty shrub where it thrives, but it is not so hardy as *C. alnifolia*, although it will survive all but the severest winters near London. The leaves have usually two more pairs of veins than the American species." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 372.*)

40067. PRUNUS SSIORI Schmidt. Amygdalaceæ. **Bird cherry.**

Wilson No. 7648.

Distribution.—A wild cherry found on Sakhalin Island, in Honshu and Hokushu in Japan, and in southern Manchuria and western China.

"Although, according to Sargent, this bird cherry is a common tree in Yezo [Hokushu] and in the mountain forests of Hondo [Honshu], Japan, it has only recently been brought into cultivation. The same author (*Forest Flora of Japan, p. 38*) observes that it is always easily distinguished by its pale, nearly white bark. Young shoots smooth. Leaves oblong, often inclined to obovate, the apex drawn out into a long slender point, the base more or less heart shaped, the margin closely set with fine, almost bristlelike teeth; thin membranous, smooth above and the same beneath except for the tufts of brownish down in the vein-axils; stalk slender, 1 to 1½ inches long, with one or two glands near the blade. Flowers small, white, produced in slender, glabrous, cylindrical racemes 4 to 6 inches long and about 1 inch wide. The species has been found in Manchuria and Sakhalin. 'The wood is very hard and close grained, and is used by the Ainos for numerous domestic purposes.' (*Sargent.*)" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 254.*)

40068. SCHIZOPHRAGMA HYDRANGEOIDES Sieb. and Zucc. Hydrangeaceæ.

Wilson No. 7671.

"A deciduous climbing shrub, reaching 40 or more feet high in a wild state; young stem smooth, reddish, and furnished with aerial roots. Leaves broadly ovate with a rounded, heart-shaped or tapering base; 4 to 6 inches long, 2½ to 4 inches wide; strongly veined, coarsely and angularly toothed, deep green and smooth above, but paler, rather glaucous, and with silky hairs beneath; stalk 1 to 2 inches long. The leaves near the inflorescence are tapered at the base; those on sterile shoots heart shaped. Flowers small, yellowish white, slightly scented, produced during July in a broad, flattish, cymose inflorescence 8 or 10 inches across. The chief feature of the inflorescence is the bracts, one of which terminates each main branch of the cyme, and is heart shaped or ovate, pale yellow, 1 to 1½ inches long; flower stalks furnished with a thin, loose down.

"Native of Japan, where, along with *Hydrangea petiolaris*, it forms a conspicuous feature in the forests, often covering the trunks of large trees. In gardens it is rare, the plant grown under the name being almost invariably *Hydrangea petiolaris*, which it resembles in habit, but in respect to leaf and inflorescence it is quite distinct. It flowered with the late Mr. Chambers at Haslemere in 1905 for the first time, so far as I am aware, in this country. It has since flowered with Miss Willmott at Warley and with Sir E. Fry near Bristol. The floral bracts are variable in size and shape." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 505.*)

This vine will cling to a brick or cement wall just as English ivy will, and it forms a beautiful cover with its white bracts. It is hardy and deserves a place in all gardens. (*Fairchild.*)

40069 to 40071.

From Lawang, Java. Presented by Mr. M. Buysman, Botanic Gardens. Received March 3, 1915.

40069. ARCHONTOPHOENIX ALEXANDRAE (Muell.) Wendl. and Drude. Phœnicaceæ. **Palm.**

A showy and elegant palm, completely spineless, and with tall, stout, 70 to 80 foot trunks, which are conspicuously ringed by the annular scars of the fallen leaves. Leaves divaricate, terminal, several feet long, forming a large crown, pinnately divided, the segments entire or toothed, numerous, the longer ones 1½ feet long, one-half to 1 inch broad, acuminate and entire or slightly notched, green above, ashy glaucous beneath; in very young specimens the leaves are undivided or simply bipartite; midrib prominent, the ribs more slender; rachis very broad and thick, glabrous or slightly scurfy, keeled above, convex beneath, the petiole slightly tomentose, and channeled above; inflorescence appearing much below the leaves, about 1 foot long, consisting of two long flattened, ultimately pendent and deciduous spathes, inclosing the short-peduncled and much-branched, pendulous spadices; flowers monœcious, greenish yellow, sessile on the branches of the spadix; in male flowers the eight perianth segments are unique in the family; female flowers with three perianth segments, sometimes more; fruit a drupe, ovoid globular, containing a single fibrous seed. Seldom ripening fruit on plants cultivated outdoors in California, and rather tender when young. Native of Queensland. (Adapted from *Norman Taylor. In Bailey, Standard Cyclopedia of Horticulture.*)

40070. CASSIA GRANDIS L. f. Cæsalpiniaceæ.

See S. P. I. Nos. 26170, 33781, and 36714 for previous introductions and descriptions.

40071. SPATHODEA NILOTICA Seemann. Bignoniaceæ.

Distribution.—A bushy tree 15 to 20 feet high with racemes of large scarlet flowers, found in the upper Nile Valley, in Kongo Free State, and in German East Africa.

40072 and 40073.

From Guayaquil, Ecuador. Presented by Mr. Frederick W. Goding, American consul. Received March 3, 1915. Quoted notes by Mr. Goding.

40072. PASSIFLORA sp. Passifloraceæ. **Passion fruit.**

"Seeds collected from plants growing 10,000 feet above sea level."

40073. PRUNUS SALICIFOLIA H. B. K. Amygdalaceæ. **Wild cherry.**

"*Capulies.* Wild cherry; grows in cold districts."

See S. P. I. Nos. 36371 and 38637 for previous introductions and descriptions.

40074. ENKIANTHUS CAMPANULATUS (Miq.) Nichols. Ericaceæ.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received March 8, 1915.

Wilson No. 6897. A variety collected in Japan by Mr. E. H. Wilson.

The species is described as "a deciduous shrub usually 4 to 6 feet high, occasionally a small tree, branches in whorls; young shoots smooth, reddish, Leaves produced in a cluster at the end of the twig, or alternate on strong growths; obovate to oval, tapered more gradually toward the base, finely toothed, 1 to 2½ inches long, one-half to 1¼ inches wide, hairy on the veins of both surfaces, dull green; stalk one-eighth to five-eighths inch long. Flowers produced during May from the terminal bud of the previous year's growth in a hairy raceme sometimes almost reduced to an umbel. Corolla bell shaped, one-third inch long, pendulous, with five rounded lobes, pale creamy yellow, veined and tipped with red; calyx with five lanceolate, pointed divisions one-sixth inch long; stamens very short; flower stalk downy, one-half to 1 inch long. Seed vessel egg shaped, one-third inch long.

"Native of Japan, introduced in 1880 by Maries, for Messrs. Veitch. This is the most satisfactory of the species of Enkianthus in our gardens, being quite hardy and flowering freely. It is sometimes cut by late frost. In the Arnold Arboretum, Massachusetts, where the frosts are much more severe than ours, it succeeds remarkably well. The leaves turn golden and red in autumn." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 512.*)

40075. PASSIFLORA EDULIS Sims. Passifloraceæ. **Passion fruit.**

From Guemes, Argentina. Presented by Mr. H. F. Schultz, director, Agricultural Experiment Station, Guemes. Received March 4, 1915.

"Seed from fruits cultivated in San Lorenzo de Jujuy. I consider this variety of passion fruit a very important acquisition for the localities where it may be feasible to grow it in the United States. I have eaten different varieties of *P. edulis* and the very large *P. quadrangularis* of Panama, the fruits of which, as you know, sometimes attain a length of 25 cm. and a diameter of 15 cm. I consider the fruits very delicious and peculiarly tempting to the palate, as well for a breakfast fruit as for dessert, and most important perhaps for soft-drink manufacture, this latter especially on account of its rich and pleasing flavor and fragrance. The few plants which I have been growing here and which are now about a year old, have already yielded quite a number of fruits, which are light-purple skinned, of usual egg-shaped form, and from 5½ to 7 cm. long and 4½ to 5 cm. in diameter. The seeds are eaten, together with the peculiarly tinted, greenish pulp, because they form no disturbing element at all. It requires a little practice to separate the mass of pulp and seeds from the tough, leathery exterior by means of a teaspoon after the fruit is halved, just as it is necessary for the novice to acquire the desired proficiency in eating a grapefruit without danger to his own and his neighbor's eyes and clothes. The fruits do not seem to possess any of the narcotic principles which Grisebach states are present in some Passiflora species, for I have repeatedly eaten a dozen fruits at a sitting, and my children eat from 10 to 20 a day without any bad effects. The fruits keep a very long time and are palatable and wholesome even after the leathery skin has dried or crumpled up. I presume that these passifloras are more peculiarly suited to California than to Florida conditions, because San Lorenzo is situated in a dry, warm climate where frosts are very uncommon. Truly enough the short rainy season, which lasts from about January until March, during which time there are copious precipitations, agrees quite well with these plants, too, for which reason they may also do surprisingly well in Florida. Mr. Smyth, from whom I obtained this strain, states that his plants last, according to soil conditions, from 3 to 8 years, while I understand that in Queensland they fruit for 20 to 50 years." (*Schultz.*)

40076 to 40093. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

Numbered March 15, 1915.

40076 to 40088.

Presented by the Usumbwa Company, Nyembe Bulunswa, Port Tabora, German East Africa.

40076. Brown durra. *Holongo wape.*

40077. White durra. *Mgegene.*

40078. White durra. *Mkulapolo.*

40079. White durra. *Yembayemba.*

40080. White durra. *Ikululukizi.*

40081. *Kangwala.*

40082. *Upolo.*

40083. *Kagiri.*

40084. White durra. *Luwele.*

40085. *Upolo wamagohe.*

40086. Red shallu. *N.*

40087. Brown durra. *K.*

40088. Brown durra. *T.*

40089 to 40093.

From Victoria, Kamerun, German West Africa. Presented by the director of the experiment station.

40089. Brown durra. *Gabli sambull.* From the Mora residency in the German lands near Lake Chad. Sown at the rainy season.

40090 to 40093.

From Pittoa near Garua. Brown durra.

40090. *Gewerie.*

40091. No. 3. *Danki-polari.*

40092. No. 4. *Dschundi Rei.*

40093. *Bita* (from Tahiti). Red shallu.

40094 to 40098.

From San Juan Bautista, Tabasco, Mexico. Presented by Mr. Gabriel Itié, director, Agricultural Experiment Station. Received March 1, 1915, Quoted notes by Mr. Itié except as otherwise indicated.

40094 and 40095. CAPSICUM spp. Solanaceæ. **Red pepper.**

40094. "Seeds of *chili masch.* Spontaneous. Little shrub, perennial. Leaves and flowers small. Fruit very short, almost round. White and reddish at first and then black or brown when mature. Very piquant."

40095. "*Pico de paloma,* seeds of chili. Spontaneous. Is distinguished from the preceding [S. P. I. No. 40094] by its larger fruit, attaining from 1 to 2 cm. in size. Likewise very piquant."

40096. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor bean.**

"Seeds of *higuerilla.* Gathered in the fields of the station. Spontaneous in the State, but not known, in spite of its abundant fruiting qualities and its richness in oil. At least two varieties are distinguished—one with brown petioles and one with white petioles. The seeds sent are of the latter."

40097. DIPHYSA SUBEROSA S. Watson. Fabaceæ.

"Seeds of *chipilcoite.* This legume grows wild in this State and is sown also for stakes for fences. Its wood is one of the most appre-

40094 to 40098—Continued. (Quoted notes by Mr. G. Itié.)

ciated for its durability and resistance to the agents of decay, damp, and insects. It keeps well in water. It is used much for telegraph posts, sleepers, and to strengthen the base of poles of more common wood."

40098. Spondias lutea L. Anacardiaceæ.

"Seeds of *Hobo*. Wild and cultivated. This is the wood most commonly employed for fences by reason of its easy propagation, for hedges and for the wonderful rapidity of its growth. The white and light wood is employed for the manufacture of packing boxes."

"*Jobo*. A large tree, with rounded head, compound leaves, and odorous white flowers in racemes, and yellow fruits resembling large jocotes (*Spondias purpurea*). They are very aromatic and the taste is acid and refreshing. The wood is white and soft and appears not to be used except in the fences of the tierra caliente." (*Pittier, Las Plantas Usuales de Costa Rica.*)

40099. Quercus suber L. Fagaceæ. **Cork oak.**

From Campo Seco, Cal. Procured from Mrs. Edward Maher. Received February 23, 1915.

40100. Pyrus sp. Malaceæ. **Pear.**

From Chingchowfu, Shantung, China. Presented by Rev. W. M. Hayes. Cuttings received March 27, 1915.

"Chinese winter pear. This variety is really not ripe until the next spring after it is picked, and while not as luscious as a good apple, yet it fills a vacancy in April and May very acceptably." (*Hayes.*)

40101. Garcinia mangostana L. Clusiaceæ. **Mangosteen.**

From Kingston, Jamaica. Presented by Mr. W. Harris, Hope Gardens, Received March 13, 1915.

40102. Pleiospermium alatum (Wight and Arn.) Swingle. Rutaceæ.
(*Limonia alata* Wight and Arn.)

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received March 16, 1915.

A small spiny tree from southern India and Ceylon, with 4 to 5 celled small soft-rinded orangelike fruits, about an inch in diameter, each cell having 1 to 2 seeds, surrounded by dark-colored, strong-smelling, mucilaginous gum. From the fact that *P. alatum* grows abundantly in the drier parts of Ceylon, it would be desirable to test it as a stock on which to graft citrus for culture on the drier types of soil. (Adapted from *Swingle, Journal Washington Academy of Sciences, vol. 6, p. 426–431, 1916.*)

40103. Garcinia tinctoria (DC.) W. F. Wight. Clusiaceæ.
(*Garcinia xanthochymus* Hook.)

From Utakamand, India. Presented by Mr. F. H. Butcher, curator, Botanic Garden and Parks. Received March 17, 1915.

"A symmetrical cone-shaped bushy tree, growing to 25 or 30 feet high, native of South India and Malaya. It bears large leathery leaves, 12 to 16 inches long and 2½ to 3½ inches in width. The handsome yellow fruit, produced in great abundance in December and January, is of the form and size of a small orange, usually with a pointed projection at the end, the tender thin skin being smooth and polished. The yellow juicy pulp is of an acid but refreshing taste. The tree is propagated by the large seeds, and thrives up to about 3,000 feet or more." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

40104. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Alajuela, Costa Rica. Presented by Mr. F. W. Smith, at the request of Dr. Inksetter. Cuttings received March 18, 1915.

40105. VITIS VINIFERA L. Vitaceæ. **Grape.**

From Alicante, Spain. Presented by Señor Gregorio Cruz Valero, director, Estacion Enologica. Cuttings received March 18, 1915.

"The *Lairen* grape, I am of the opinion, is the same as *Listan* or *Palomino*, at the present time extensively grown in California as the *Golden Chasselas.*" (*George C. Husmann.*)

40106 to 40138.

From Wakamatsu, Iwashiro, Japan. Presented by Rev. Christopher Noss. Received March 8, 1915. Quoted notes by Mr. Noss.

"From an exhibition in Kawamata, near Fukushima City."

40106 to 40127. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

40106. "*Mochidaizu* (*dai*, large; *zu*, bean), used in *mochi* (glutinous rice boiled and pounded in a mortar)."

40107. "No. 2. *Nakatedaizu* (second early), used in *miso* (beans, etc., pickled in salt and made into soup), *tofu* (bean curd)."

40108. "No. 3. *Shichi-ri-korobi-daizu* (20-mile rolling), used for *tofu*, *miso*, and *soy*."

40109. "No. 4. *Yuki-no-shita-daizu* (under the snow), used for *tofu*, *soy*, and *miso*."

40110. "No. 5. *Wasedaizu* (early), used for *tofu*, *soy*, and *miso*."

40111. "No. 6. *Misodaizu.*"

40112. "No. 7. *Ko-tsubu-daizu* (small grain), used for *miso* and *natto* (buried, fermented, and eaten as a relish)."

40113. 'No. 8. *Kinako-daizu*, made into *kinako* (a flour used in cooking) and also *natto*. Said to have been brought by soldiers from Manchuria.

40114. "No. 9. *Tamazukuridaizu* (name of a county near Sendai), used boiled."

40115. "No. 10. *Asahidaizu* (morning sun), used for *natto*."

40116. "No. 11. *Darumadaizu* (Dharma, whose image is a roly-poly, can not be upset), used boiled and for *tofu*."

40117. "No. 12. *Taiwandaizu* (Formosa), used boiled."

40118. "No. 13. *Hato-koroshi-daizu* (dove killer), used boiled."

40119. "No. 14. *Usu-ao-daizu* (light green), used for *kinako* and boiled."

40106 to 40138—Continued. (Quoted notes by Rev. C. Noss.)

40120. "No. 15. *Ao-daizu* (green), used for *kinako* and boiled."

40121. "No. 16. *Aka-kuki-daizu* (red stalk), used for *natto* and *miso*."

40122. "No. 17. *Fuku-shiro-daizu* (clothing white), used for *tofu*."

40123. "No. 18. *Hachi-ri-han-daizu* (21 miles), used boiled. The name *Hachi-ri-han-daizu* involves a curious play on words. *Hachi-ri-han* means 'eight ri (a ri is 2½ miles) and a half,' which is just a little short of *ku-ri*. Now, *ku-ri* means nine ri, and *kuri* also means chestnut, so the expression in question means that the beans so named are almost equal to chestnuts."

40124 to 40127. "Beans are used boiled."

40124. "No. 19. *Yoshiwaradaizu* (harlot quarters in Tokyo)."

40125. "No. 20. *Chadaizu* (tea, alluding to the color)."

40126. "No. 21. *Kichidaizu* (lucky)."

40127. "No. 22. *Kurodaizu* (black)."

40128. DIOSPYROS LOTUS L. Diospyraceæ. **Persimmon.**

"*Mamegaki* (bean persimmon). The edible Japanese persimmon is grafted on the stock of this tree."

40129 to 40134. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Fabaceæ. **Adzuki bean.**

"Beans are made into *an* (boiled, strained, and mixed with brown sugar) and boiled and mixed with boiled rice to make *akameshi* (red food)."

40129. "No. 24. *Akaazuki* (*aka*, red; *azuki*, little bean)."

40130. "No. 25. *Nakateazuki* (second early)."

40131. "No. 26. *Shiroazuki* (white)."

40132. "No. 27. *Okuteazuki* (late)."

40133. "No. 28. *Kataazuki* (mottled, figured)."

40134. "No. 29. *Dainagon azuki*."

40135. PHASEOLUS COCCINEUS L. Fabaceæ.

"No. 23. *Daikwodaizu* (great light), boiled and made into cakes."

40136 to 40138. PISUM spp. Fabaceæ.

"The pods are boiled in soup with miso."

40136. PISUM ARVENSE L. **Field pea.**

"No. 32. *Itaria Osaya* (Italian large pod)."

40137 and 40138. PISUM SATIVUM L. **Pea.**

40137. "No. 31. *Nion Saya*."

40138. "No. 30. *Nion Kinu Saya* (Japan silk pod)."

40139 to 40201.

From Kew, England. Presented by the director, Royal Botanic Gardens. Received March 5, 1915.

40139 to 40153. BERBERIS spp. Berberidaceæ. **Barberry.**

40139. BERBERIS sp.

Received as *Berberis vilmoriniana*.

40139 to 40201—Continued.

40140. BERBERIS HOOKERI VIRIDIS Schneider.

Differs from the typical form in having the leaves bright green underneath.

40141. BERBERIS SUBCAULIALATA Schneider.

See S. P. I. Nos. 37497 and 39575 for previous introductions and description.

"This species belongs to the same group as *B. stapfiana* [S. P. I. No. 37975], but it has globose fruits ripe in November, more distinctly angled branchlets, and larger leaves; the general aspect is otherwise very similar." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 249.*)

40142. BERBERIS AGGREGATA Schneider.

See S. P. I. Nos. 34550 and 39574 for previous introductions and description.

"A small, spreading bush. Leaves in rosettes about nine together, ovate to oblanceolate, entire or with a few teeth or spiny hairs in the upper half, dull green above, gray-green beneath, usually about one-half inch long and one-fourth inch broad. Berries small, creamy green, suffused with coral, in dense sessile clusters. China." (*Kew Bulletin of Miscellaneous Information, 1914, Appendix, p. 58.*)

40143. BERBERIS ANGULOSA Wall.

See S. P. I. Nos. 27115 and 33016 for previous introductions.

"A deciduous shrub, 4 feet or more high, with erect, grooved branchlets covered when young with a short, dark down. Leaves dark, glossy green, clustered in the axils of stiff spines, which are sometimes single, but usually wedge shaped, 1 to 1½ inches long, leathery, narrowing at the base to a very short stalk or none at all, the apex either rounded or pointed, often terminating in a short tooth; the slightly curled back margins are either entire or have 1 to 3 spiny teeth at each side. Flowers solitary, on stalks one-half to 1 inch long, or on short two to four flowered racemes; orange-yellow, globose, one-half to two-thirds inch across; outer sepals narrow oblong, inner one twice as wide; petals obovate. Fruit elliptical, two-thirds inch long, scarlet.

"Native of north India; first discovered in Kumaon early in the 19th century and in 1849 by Hooker in the Sikkim Himalayas, at 11,000 to 13,000 feet. It is absolutely hardy at Kew, and, although not one of the showiest barberries, is noteworthy for its unusually large flowers and berries. The latter are eatable, and, being less acid, are more palatable than most barberries." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 234.*)

"*Berberis angulosa* is a rare Himalayan species and one of the largest flowered and fruited of the 13 found in that mountain range; it is also one of the most distinct. In Sikkim it forms a shrub 4 feet high and more . . . and forms a striking object in autumn from the rich golden yellow and red coloring of the foliage." (*Curtis's Botanical Magazine, pl. 7071.*)

40144. BERBERIS ARISTATA DC.

See S. P. I. Nos. 27116, 32789, and 33017 for previous introductions.

"A very handsome shrub, of spreading, elegant habit, as much as 10 feet high and 15 feet in diameter, with smooth young branchlets

40139 to 40201—Continued.

becoming gray the second season. Ordinarily it is deciduous, but young plants or vigorous sucker growths will retain their foliage through the winter. Leaves 3 to 7 in a tuft, 1½ inches long in each tuft, obovate, green on both sides, or often whitish beneath; always spine tipped, but varying from few or numerous teeth on the margins to none at all. Each tuft of leaves springs from a single or triple spine, sometimes 1¼ inches long, and produces one drooping raceme 2 to 3 inches long. Flowers numerous, bright golden yellow. Berries spindle shaped or oblong, up to one-half inch long, red, covered with blue-white bloom.

"Native of the Himalayas, and represented by a great number of slightly varying forms, all of which are valuable garden plants. Of all deciduous barberries this is the strongest growing; it is also one of the most ornamental. It is an admirable shrub on a spacious lawn, almost as striking when loaded with its fine trusses of blue-white berries as when it is in bloom. So well adapted to our climate is it that it has been found wild in English hedgerows, having grown there, no doubt, from seeds deposited by birds." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 235–236.*)

40145. Berberis concinna Hook. f.

See S. P. I. Nos. 27117 and 33018 for previous introductions.

"The seeds (of the original collection) were gathered from small bushes growing in the Lachen Valley of the Sikkim Himalayas, at an elevation of 12,000 to 13,000 feet; it there formed a small, low bush, 1 to 3 feet high, with spreading almost prostrate branches, thickly covered with small leaves of a deep-green hue and polished above, snowy white and glaucous below; these colors, the large oblong scarlet berries, and red branchlets giving the shrub a singularly neat and pretty appearance when in fruit." (*Hooker. In Curtis's Botanical Magazine, pl. 4744, 1853.*)

"A low, deciduous bush, 3 feet high, of close, compact habit, branches furrowed. Leaves lustrous green above, white beneath, obovate, 1 inch or less long, tapering at the base to a short stalk, the midrib ending in a tuft of leaves. Flowers solitary, on a slender stalk 1 to 1½ inches long, pendent, globose, deep yellow, one-half inch across. Berries oblong, fleshy, red, one-half to three-fourths inch long.

"Native of the Sikkim Himalayas, at 12,000 to 13,000 feet; introduced to Kew by Sir Joseph Hooker about 1850. A very pretty barberry, and distinct through the vivid whiteness of the under surface of the leaves. It is best propagated by seeds, which it produces most seasons." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 238.*)

40146. Berberis diaphana Maxim.

Scarlet-fruited, yellow-flowered bush, 1 to 2 meters high, from western Szechwan, China, nearly related to *B. macrosepala* of the Sikkim Himalayas, which has puberulous branchlets and is not found in China, and to *B. yunnanensis*, which has thinner, mostly entire, leaves, three to eight flowered, often rather elongated inflorescences, and only three to four ovules and seeds. This barberry may be distinguished by its chartaceous leaves, distinctly reticulate on

40139 to 40201—Continued.

both sides, and mostly spinose serrate, one to four flowered inflorescence, and by the more numerous (six to eight) ovules and seeds. (Adapted from *Schneider, in Plantae Wilsonianae, vol. 1, p. 354, 1913.*)

40147. BERBERIS GAGNEPAINI Schneider.

See S. P. I. Nos. 32701 and 37495 for previous introductions and description.

"An evergreen shrub, 3 to 6 feet high. Leaves lanceolate, 2 to 4 inches long, one-fourth to three-fourths inch broad, tapering very much toward the apex, coriaceous, spiny on the margin, spines at the bases of the leaves tripartite, one-half to two-thirds inch long. Flowers in fascicles of usually five to nine, delicate yellow, borne on red pedicels. Fruits ellipsoid, glaucous purple. This is figured in Curtis's Botanical Magazine, pl. 8185, as *B. acuminata*, but the true *B. acuminata* Franch. is less compact in habit, has larger, coarser, and thicker leaves, and stouter spines. China." (*Kew Bulletin of Miscellaneous Information, 1910, Appendix iii, p. 60.*)

40148. BERBERIS POLYANTHA Hemsl.

See S. P. I. No. 32698 for previous introduction and description.

"A deciduous shrub, 6 to 10 feet high, the young shoots reddish brown, ribbed, not downy; thorns solitary or three pronged, one-half to 1 inch long. Leaves obovate and mostly rounded at the end, the larger ones toothed at the terminal half, the smaller ones frequently entire, all tapered and wedge shaped at the base; one-half to 2 inches long, one-eighth to two-thirds inch wide; finely netveined on both sides, not downy; stalk one-fourth inch or less long. Flowers yellow, produced during June and July in drooping panicles 3 to 4 inches long, 1 to 1½ inches wide, carrying 20 to over 50 blossoms. Fruit red.

"Discovered in 1899 by Mr. A. E. Pratt, near Tatsienlu, Szechwan, western China; introduced from the same region by Wilson in 1904. A very fine species, remarkable for the large and abundant flower panicles." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 246.*)

40149. BERBERIS PRATTII Schneider.

See S. P. I. No. 37496 for previous introduction.

"This western Szechwan shrub, 6 to 10 feet tall, was first collected by Mr. A. E. Pratt in the neighborhood of Tatsienlu. It was subsequently met with there and at Muping by Mr. E. H. Wilson, when collecting for Messrs. James Veitch & Sons. Originally included by Hemsley in *B. polyantha*, this Berberis has been kept apart by Schneider on account of its less closely reticulated leaves and narrower inflorescence. But while perhaps most closely related to *B. polyantha* Hemsley, *B. prattii* most resembles *B. brevipaniculata* C. K. Schneid., with which it has been confused in collections, though it is readily distinguished by the pale green but not glaucous lower surface of the leaves. Like *B. brevipaniculata*, our plant is a shrub of dense growth, forming a mass of twiggy branches out of which are thrust each year a number of long whiplike shoots. More beautiful when in flower than most Chinese species of the genus, it is

40139 to 40201—Continued.

still more effective when laden in September with its branches of salmon-red fruits. The shrub grows very freely and is apparently quite hardy; the freedom with which it fruits promises to make its propagation easy. Like other species of Berberis, this one enjoys a well-drained loamy soil." (*Curtis's Botanical Magazine, pl. 8549.*)

40150. BERBERIS STAPFIANA Schneider.

See S. P. I. No. 37975 for previous introduction and description.

"A deciduous, or partially evergreen, glabrous shrub, probably 5 or 6 feet high, of elegant habit, the stems spreading and arching; leaf clusters one-third inch apart, spines three pronged, very slender and needlelike, brown, one-third to three-fourths inch long. Leaves oblanceolate, rounded to pointed at the apex, mostly entire, but sometimes toothed near the end, tapered at the base; one-half to 1 inch long, one-twelfth to three-sixteenths inch wide; scarcely stalked, of hard texture. Flowers pale yellow, globose, one-sixth inch wide, borne four to seven together in axillary, stalkless, or very shortly stalked clusters. The stalk of the individual flower is one-eighth to one-sixth inch long. Fruit oval, carmine red with a slight bloom, one-fourth inch long, containing two or three seeds.

"Native of western China; introduced to Kew from St. Petersburg in 1896, and later from Wilson's seeds. M. Maurice de Vilmorin has also grown it for some years at Les Barres, in France. It is a charming shrub, of free, graceful growth, allied to *B. wilsonae*, but that species is distinguished by its downy shoots." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 249.*)

40151. BERBERIS VIRESCENS Hook. f.

See S. P. I. Nos. 27122 and 30753 for previous introductions.

"An elegant, deciduous shrub, 6 to 9 feet high; with smooth, reddish brown, shining branches, armed at each leaf tuft with a slender, 3-parted or single spine up to three-fourths inch long. Leaves two-thirds to 1¼ inches long, obovate, thin, pale but bright green; the apex round or tipped with a small spine, the margins toothed or entire. Flowers one-third inch in diameter, pale greenish or sulphur yellow, and produced on slender, short stalks, either in panicles or short racemes. Berries slender, nearly one-half inch long, reddish, covered with bloom.

"Discovered by Sir Joseph Hooker, at an elevation of 9,000 feet, in Sikkim, in 1849, and introduced to Kew about the same time; this barberry was not given specific rank until described 40 years after. It is not one of the most attractive of barberries in regard to its flowers or fruit, but its habit is elegant, and the red tinge of its stems is pleasing in winter. There are two forms of the species at Kew, one regarded as typical, with red fruits; the other, var. *macrocarpa*, with large black fruits five-eighths inch long." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 251.*)

40152. BERBERIS WILSONAE Hemsl.

"An elegant, deciduous, sometimes partially evergreen shrub, 2 to 4 feet high, of spreading habit, and usually more in diameter; branches comparatively thin, reddish brown, slightly downy, armed with slender 3-parted spines one-half to three-fourths inch long, and red when young. Leaves as a rule less than 1 inch long, otherwise

40139 to 40201—Continued.

entire, or occasionally three lobed at the apex; smooth, conspicuously veined, gray-green above, somewhat glaucous beneath. Flowers small, pale yellow, borne two to six together in fascicles or short racemes. Berries roundish, coral or salmon red, somewhat translucent, borne very abundantly. Native of western China; discovered and introduced about 1904 by Mr. E. H. Wilson, after whose wife it is named. This is one of the most charming new introductions from western China, of neat yet elegant habit, and most noteworthy for its prettily colored, abundant berries. The leaves are said by Wilson to assume brilliant tints in autumn." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 253.*)

40153. BERBERIS YUNNANENSIS Franchet.

"A deciduous shrub, 3 to 6 feet high, of dense, rounded habit, with gray, smooth branchlets, armed with 3 or 5 parted spines. Leaves obovate, sometimes almost orbicular, three-fourths to 1½ inches long, one-third to two-thirds, rarely 1 inch wide, rounded or pointed at the apex, tapering to a stalk at the base; margins mostly entire on the flowering twigs, more often toothed on the sterile ones. Flowers pale yellow, three to eight in a cluster; three-fourths inch across, flower stalks slender, three-fourths to 1¼ inches long. Berries oval, bright red, one-half inch long. Native of western China: first discovered in Yunnan by Delavay in 1885, at an altitude of 10,000 feet. It reached cultivation by way of France, and was introduced to Kew in 1904. It is a pretty shrub, and is distinct in regard to the size of its flowers and fruit, both of which are amongst the largest in the genus. It is also one of the most beautiful in its autumn livery of crimson." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 253.*)

40154 and 40155. BETULA spp. Betulaceæ. Birch.

40154. BETULA ERMANI Cham.

A tree said to become 100 feet high; bark of the trunk peeling, creamy white; that of the branches orange-brown. Leaves broadly ovate, with a straight or slightly heart-shaped base, taper pointed, coarsely triangular toothed; 2 to 3 inches long, 1½ to 2½ inches broad. Native of Manchuria, Korea [Chosen], Japan, and, like many other plants from the same region, very liable to injury by spring frosts, owing to its early start into growth. For this reason it does not form a clean trunk and is subject to fungoid attacks. (Abridged from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 256.*)

40155. BETULA ERMANI NIPPONICA Maxim.

A Japanese form. This variety thrives better in cultivation through starting later into growth, and makes a clean-grown, handsome birch—one of the most striking of the white-stemmed group. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 256–257.*)

40156. CALOPHACA WOLGARICA (L. f.) Fisch. Fabaceæ.

"A deciduous shrub, said to become 6 feet high, but rarely more than half as high in this country [England]; bark of branches downy when quite young, peeling when old. Leaves pinnate, 2 to 3 inches long, com-

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posed of 11 to 17 leaflets. Racemes produced from the leaf axils of the current year's growth, 3 to 5 inches long, very downy, carrying four to nine flowers toward the end. Flowers yellow, pea shaped, three-fourths to 1 inch long, each on a stalk one-eighth inch long; calyx downy, one-third inch long, with slender, pointed teeth. Pod three-fourths to 1¼ inches long, cylindrical, covered with glandular hairs, one or two seeded. Blossoms in June and July. Native of the southeastern part of European Russia, in the regions of the Rivers Volga (from which it takes its name) and Don. It is frequently found in arid places and on dry hillsides. Introduced in 1756. It is quite hardy in the south of England, but may need the protection of a wall in the north. It likes abundant sunshine, and during hot summers flowers profusely. It is only after such seasons that seeds ripen. As a rule, it is grafted on standards of laburnum or Caragana, when it forms a big, mop-headed plant with semipendent branches. Plants raised in that way are sometimes short lived, but it is probably the best and easiest way, for plants raised from seed are not easy to rear. They are very liable to decay through damp during the winter, and should for two years be kept in pots, then planted out on a well-drained site. When grafted on the laburnum, no special precautions are needed." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 282.*)

40157 and 40158. Caragana spp. Fabaceæ.

40157. Caragana aurantiaca Koehne.

"A deciduous shrub about 4 feet high, with graceful, ultimately pendulous, leafy branches, long, slender, but little divided, and armed with triple spines. Leaves very short stalked, consisting of four narrow, linear leaflets, one-third to one-half inch long, one-eighth inch wide. Flowers three-fourths inch long, produced singly on a stalk one-fourth inch long, orange yellow; calyx three-sixteenths inch long, bell shaped, with five triangular, minutely ciliated teeth. Pod 1 to 1½ inches long, smooth, rather cylindrical, pointed, carrying four to six seeds.

"Native of central Asia; introduced in 1887 as a variety of *C. pygmaea*, of which it was at first regarded merely as a deeper colored form. It differs also in the more taper-pointed leaflets and in the shorter calyx. This and *C. pygmaea* are probably the prettiest of all Caraganas. Its habit is graceful, and it blossoms with great profusion, the flowers hanging thickly from the under side of the branch in a long row, three or four to the inch. It blossoms in May and June and can be easily propagated by late summer cuttings." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 288.*)

40158. Caragana frutex (L.) Koch.

"A deciduous shrub up to 10 feet in height, with long, often erect, supple branches, not much divided except near the ends. Leaves composed of two pairs of leaflets, which are attached near the end of the common stalk, being themselves stalkless; they are obovate, rounded at the end, one-half to over 1 inch long, smooth, dull green. Flowers bright yellow, three-fourths to 1 inch long, produced singly on a stalk somewhat shorter than itself. Calyx one-third inch long, bell shaped, smooth. Pod 1½ inches long, one-eighth inch wide,

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cylindrical, smooth. In a wild state this species extends from the south of Russia to Japan. It was introduced in 1752. It is a pretty shrub in flower, and is often quite neat and graceful in habit, especially when 3 or 4 feet high, with its numerous thin twigs, rather pendulous. It is distinct in being unarmed and without down." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 290.*)

40159. CARMICHAELIA FLAGELLIFORMIS Colenso. Fabaceæ.

"A deciduous or often leafless shrub, 4 or 5 feet high, with numerous erect-growing, slender, grooved branches, flattened or convex when young, round when old. Leaves very small and inconspicuous, consisting of three or five tiny leaflets, which are somewhat larger in young plants than in old ones. Flowers purplish lilac, pea shaped, produced in axillary downy racemes; there are from one to three racemes at each joint of the twigs and from three to seven flowers in each raceme, the whole forming a short, dense cluster. The flowers, although small, about one-eighth inch long, are borne in extraordinary profusion. Pod one-fourth to one-half inch long, nearly as wide, ending in a stout-pointed beak, and containing usually two seeds. Native of New Zealand, long grown at Kew in a greenhouse, and for the last 20 years unprotected in the open ground, where, although slightly injured at the younger parts in severe winters, it is on the whole quite hardy and produces both flowers and seeds in abundance. It is not very showy or ornamental, but its flat, erect branches give it a quaint and unusual aspect. These green shoots perform the usual functions of leaves. It is not so attractive a plant as its ally, *Notospartium carmichaeliae*, but is hardier. The Notospartium differs in its stouter twigs and more pendulous habit, in its larger pink flowers, and in the longer, narrower, jointed pod containing more seeds." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 292.*)

40160 and 40161. CHAENOMELES spp. Malaceæ. **Quince.**

40160. CHAENOMELES LAGENARIA CATHAYENSIS (Hemsl.) Rehd.

"A deciduous shrub of open habit, sparsely branched and more or less thorny. The branches are tortuous, furnished with spiny spurs several inches long. Leaves short stalked, lanceolate, 3 to 5 inches long, finely toothed, pointed, tapering at the base; smooth above, reddish downy beneath. On the young growths of the year the stipules are large, broad, and leaflike, oblique, 1 inch long, toothed. On year-old shoots the leaves are in tufts springing from the axil of a spine; stipules small. Flowers two or three together in short clusters; each flower 1½ inches in diameter; petals white, round, overlapping; calyx ciliate. Stamens numerous, shorter than the petals. Fruit very large and heavy, 4 to 6 inches long, 2½ to 3½ inches wide; somewhat egg shaped, but abruptly contracted near the base. Seed three-eighths inch long, wedge shaped, pointed at one end. Although this quince is probably a native of China, nothing appears to be definitely known of its habitat. Henry collected it in the Province of Hupeh, China, but never undoubtedly wild. It has long been grown at Kew, and by Canon Ellacombe at Bitton, but its introduction is unrecorded. It is perfectly hardy and bears fruit freely, but this does not ripen always out of doors. Although not in any way showy, its habit is quaint, and the huge fruits stuck close

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to the branches have a curious and interesting appearance. Increased by seeds." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 452,* under *Cydonia cathayensis.*)

40161. CHAENOMELES JAPONICA (Thunb.) Lindley. **Dwarf quince.**

"A low, spreading, deciduous thorny shrub, usually under 3 feet in height, considerably more in width; branchlets very downy when young. Leaves 1 to 2 inches long, obovate or oval to almost orbicular, toothed, tapering at the base to a short stalk, quite smooth; stipules large on the young growing shoots, ovate or broadly heart shaped, one-fourth to three-fourths inch wide. Flowers in almost stalkless clusters from the joints of the year-old wood, very abundant, orange-red, scarlet or blood red, 1½ inches across. Fruit apple shaped, 1½ inches in diameter, yellow, stained with red on the sunny side, fragrant. Native of Japan; introduced about 1869 by Messrs. Maule, of Bristol. This is one of the most charming of red-flowered dwarf shrubs, flowering from April to June, and when at its best, literally wreathing its branches with blossom. It bears fruits freely, and they are pleasantly colored and scented in early winter; though harsh and acid when raw, they make an excellent conserve. Besides its dwarfer habit, it differs from its near ally, *C. japonica* [*C. lagenaria*], in having more obovate or rounded leaves, minutely warted twigs, and more coarsely toothed leaves. (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 453,* under *Cydonia maulei.*)

40162 to 40175. COTONEASTER spp. Malaceæ. **Cotoneaster.**

40162. COTONEASTER AFFINIS BACILLARIS (Wall.) Schneider.

"A deciduous shrub, 15 or more feet high, said to be found also as a small tree, of very graceful habit. Branches arching and often pendulous toward the end, the whole forming a wide-spreading mass more in diameter than in height; twigs smooth, or slightly downy. Leaves 1 to 3 inches long, one-third to half as wide, of variable shape, usually oval, ovate, or slightly obovate, pointed, smooth or becoming so; stalk one-fourth to one-half inch long. Flowers white, one-third inch across, borne numerously in cymose clusters, 1 to 2 inches across, at the end of short axillary branches. Fruit roundish, one-fourth inch or less in diameter, purplish brown or nearly black. Native of the Himalayas up to 10,000 feet. This is one of the most useful of cotoneasters, and one of the most graceful. It has been largely planted on the margins of the island of the lake at Kew, where the branches overhang the water and have the elegance of a willow, with the added attractions of abundant flowers and fruits. As a flowering shrub, this is one of the prettiest in the genus, but its fruits have not the bright color that gives to many cotoneasters their greatest charm. The wood is strong and elastic, and is valued in its native regions for making walking sticks and spear shafts. The species is variable in the shape and amount of down on the leaves, and no clear line can be drawn between it and *C. affinis*, which has woolly leaves. (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 406.*)

40163. COTONEASTER DAMMERI Schneider.

"A prostrate, evergreen shrub, with slender creeping stems keeping close to the ground; young wood downy. Leaves obovate or

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oval, three-fourths to 1¼ inches long, one-fourth to five-eighths inch wide; margins incurved, apex usually rounded, downy on the lower surface when young, ultimately quite smooth on both sides; stalk one-eighth to one-fourth inch long; veins in four to six pairs. Flowers solitary, occasionally in pairs, on downy stalks one-fourth inch long, pure white, one-third to one-half inch in diameter; calyx downy, with broad triangular lobes. Fruit coral red, globose, or rather top shaped, one-fourth inch wide. Native of central China; found by Henry near Ichang, and introduced in 1900 by Wilson from western Hupeh, where it occurs at 5,000 to 7,000 feet altitude. It is quite hardy and is very distinct among cotoneasters for its perfectly prostrate habit. Its fruits are brightly colored, and the plant will no doubt prove useful as an evergreen carpet shrub; also for covering sunny slopes, as it is very vigorous. It occurs wild on heaths and rocky ground." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 411.*)

40164. COTONEASTER DIVARICATA Rehd. and Wilson.

"A deciduous shrub up to 6 feet high, of spreading habit; young shoots clothed with grayish hairs, becoming the second year smooth and reddish brown. Leaves roundish oval, sometimes ovate or obovate, tapered abruptly toward both ends, the apex mucronate; one-third to 1 inch long, one-fourth to five-eighths inch wide, smaller on the flowering shoots; dark glossy green, and soon smooth above, sparsely hairy beneath; veins in three or four pairs; leafstalk one-twelfth inch or less long. Flowers usually in threes at the end of short twigs, often supplemented by solitary ones in the axils of the terminal leaves, rosy white; calyx lobes triangular; they and the tube loosely woolly. Fruit red, egg shaped, one-third inch long, carrying two stones. Native of western Hupeh and western Szechwan, China; first found by Henry in the latter Province about 1887; introduced to the Coombe Wood nursery by Wilson in 1904. It is one of the handsomest in fruit of Chinese cotoneasters and was given a first-class certificate by the R. H. Society in the autumn of 1912. It is allied to the Himalayan *C. simonsii*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 409.*)

40165. COTONEASTER FOVEOLATA Rehd. and Wilson.

"A deciduous shrub, 10 to 20 feet high; young shoots covered with yellowish gray, bristly hairs, becoming smooth and grayish the second year. Leaves oval to ovate, slender pointed, usually wedge shaped, sometimes rounder at the base; 1½ to 4 inches long, three-fourths to 1¾ inches wide; dull green and soon smooth above, sparsely hairy beneath, more so on the midrib and veins; margins downy, veins in 3 to 6 pairs, the blade often puckered between them; stalk woolly, one-sixth inch or less in length. Corymbs three to seven flowered, on a stalk about one-half inch long, and hairy, like the young wood; flowers one-third inch wide; petals rose-tinted white; calyx tube woolly, the lobes triangular and woolly only on the margins. Fruit red, finally black, roundish, one-fourth to one-third inch wide, carrying usually three or four stones. Native of western Hupeh, China; introduced by Wilson in 1908. It has not flowered under cultivation but is growing vigorously." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 409.*)

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40166. COTONEASTER FRANCHETI Bois.

"An evergreen shrub, 8 to 10 feet high, with slender, gracefully arching branches, which the first year are covered with a dense, pale brown wool. Leaves oval, tapering toward both ends, from three-fourths to 1¼ inches long, about half as wide, pointed; upper surface rather hairy when young, lustrous green later, lower surface covered with a thick, whitish, afterwards pale-brown felt; stalk one-eighth inch or less long. Flowers borne in corymbs of 5 to 15 flowers, terminating short, lateral, leafy twigs; petals erect, white, touched with rose on the outside; calyx felted like the under surface of the leaves. Fruit oblong, one-fourth to one-third inch long; orange scarlet. Native of Tibet and western China; first raised in France about 1895, by Mr. Maurice de Vilmorin, from seed sent by the Abbé Soulié. It is a shrub of very elegant growth, whose fruits are freely borne, but lose in brilliancy by the grayish down, more or less dense, which covers them. It was first confused with *C. pannosa;* the distinguishing characters may be defined as follows: Leaves rather longer than in *pannosa*, but with stalks scarcely half as long, the upper surface somewhat lustrous; flowers not so numerous in each cluster, petals erect and rose tinted; fruits larger, longer, and not of so deep a red. It flowers in May, and the fruit is ripe in October." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 409.*)

40167. COTONEASTER HENRYANA (Schneid.) Rehd. and Wilson.

"An evergreen shrub, 10 to 12 feet high, of sparse habit; the branches gracefully pendulous; young shoots hairy, becoming the second year smooth, and of a dark purplish brown. Leaves 2 to 4½ inches long, about one-third as wide, narrowly oval or obovate, finely pointed, dark green, and somewhat rough to the touch above; covered beneath when young with a grayish wool which mostly falls away by the second season, that which remains becoming brown and confined to the midrib and veins, the under surface still remaining brownish white; veins in 9 to 12 pairs; stalk one-fourth to one-half inch long, hairy. Flowers white, produced about the middle of June in corymbs 2 to 2½ inches across, terminating leafy twigs less than 1 inch long, that spring from the axils of the still-persisting leaves of the previous year; stamens 20, with purple anthers; calyx and flower stalks hairy. Fruit brownish crimson, egg shaped, one-fourth inch long. Native of central China; introduced by Wilson in 1901. A handsome and distinct evergreen, and probably the largest leaved of cotoneasters with persistent leaves. Allied to *C. salicifolia.*" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 410.*)

40168. COTONEASTER MULTIFLORA Bunge.

"A deciduous shrub or small tree, 10 to 12 feet high; branches slender, pendulous, or arching, and smooth except when quite young. Leaves thin in texture, varying in shape from ovate and oval to roundish, three-fourths to 2½ inches long, one-half to 1½ inches wide; usually blunt or rounded at the end; hairy when quite young, but soon becoming smooth above; pale and often smooth, never permanently woolly beneath; stalk one-fourth to one-half inch long. Flowers white, produced in branching clusters of 3 to 12 or more, not pleasantly scented. Fruit round or pear shaped, red. Native of

40139 to 40201—Continued.

Soongaria and other parts of the northwestern borders of China; introduced in 1837. This is one of the most elegant of cotoneasters. There is a specimen at Kew with a single well-formed trunk supporting a crown of pendulous or arching branches; the whole 10 to 12 feet high. When the branches are wreathed with the abundant blossom in May and June, this tree makes a most charming picture. The same or a closely allied shrub has recently been introduced by Wilson from western China, but 1,500 or more miles to the southwest of the first habitat." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 413.*)

40169. COTONEASTER PANNOSA Franchet.

"An evergreen shrub of free and elegant habit, 10 feet or more high; branches arching and slender, covered with whitish felt when young. Leaves oval, tapering toward both ends, one-half to 1 inch long, about half as wide; always dull green above, covered with whitish felt beneath; stalk up to one-fourth inch long. Flowers one-fourth to three-eighths inch across, borne in corymbs of as many as 15 or 20; petals white, spreading; calyx woolly. Fruits scarcely one-fourth inch long, dull red. Native of Yunnan, China, up to 9,000 feet altitude; raised in Paris in 1888, from seed sent there by the Abbé Delavay. Introduced to Kew in 1892. The differences between this species and *C. francheti* [S. P. I. No. 40166] have already been alluded to under that species. Both are characterized by extreme elegance of habit and by being very woolly on young bark, flower stalk, calyx, and under surface of leaves; but *C. pannosa* has duller leaves, is less hairy, when young, on the upper surface, more spreading whiter petals, and shorter, rounder fruits of a deeper red." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 414.*)

40170. COTONEASTER RACEMIFLORA (Desf.) Koch.

"A deciduous shrub up to 6 or 8 feet high, with slender branches, gray felted when young, becoming smooth and reddish brown later. Leaves oval or ovate, sometimes roundish, tapering toward the base, one-half to 1¼ inches in length, dark green and ultimately smooth above; gray felted beneath. Flowers white, in clusters of 4 to 12 or more on felted stalks. Fruit roundish, bright red. Native of southeastern Europe, Asia Minor, etc. Its identity has been much obscured, owing to a confusion with *C. lindleyi*, a taller, more robust shrub with much larger leaves and black fruits, also known as *C. nummularia*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 414.*)

40171. COTONEASTER DIELSIANA Pritzel.

"A deciduous shrub, 8 feet, perhaps more, high, with long, extremely slender, arching or quite pendulous branches; branchlets downy when young. Leaves one-half to 1½ inches long, three-eighths to 1 inch wide, ovate; hairy above when young, covered beneath with felt, at first white, afterwards pale brown; veins prominent. Flowers three to seven in a cluster, terminating side shoots 1 inch or so long; calyx and flower stalk hairy, calyx lobes shallowly triangular. Fruit scarlet, round or rather pear shaped; one-quarter inch long. Native of central China; introduced for Messrs. Veitch by Wilson in

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1900. It flowers in June, and the fruit is in full color in September and October; it is then one of the most effective of cotoneasters. The habit is singularly graceful, the long whiplike shoots spreading outward and downward in every direction. The name *applanata* refers to the distichous arrangement of the branches of young plants, which gives them the appearance of a well-trained tree." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 408,* under *C. applanata.*)

40172. Cotoneaster acutifolia villosula Rehd. and Wilson.

"A deciduous shrub of bushy habit, 5 to 7 feet high, branches often pendulous; young twigs downy. Leaves pointed, ovate-lanceolate to oval, 1 to 2½ inches long, half as wide; dull green, and with scattered hairs above, paler and hairy beneath, especially when young; veins in five or six pairs; stalk one-twelfth to one-eighth inch long. Flowers white, three or more together in corymbs; stalks and calyx woolly, lobes of calyx triangular. Fruit reddish at first, finally black, one-third inch in diameter, smooth. Native of northern and western China. This is not one of the handsomest of cotoneasters and is, perhaps, a poor form of *C. lucida.* There has been much confusion between the two, owing to *C. lucida* also having been called *C. acutifolia*, but from that species the present one is distinguished by its dull green, not shining, more hairy leaves, and its woolly calyx and flower stalks. Var. *villosula* has young shoots clothed with yellowish gray loose hairs, becoming smooth and purplish brown the second year. Leaves 1½ to 4½ inches long, one-half to 2¼ inches wide, larger and more drawn out at the apex than in the type. Petals rose-tinted white. Fruit roundish pear shaped, two-fifths inch long, woolly, ultimately shining black. Native of western Hupeh; introduced by Wilson in 1900. A very vigorous shrub." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 405.*)

40173. Cotoneaster affinis Lindley.

"The identity of this species is somewhat confused, but what is usually grown under the name is an ally of *C. bacillaris* and *C. frigida.* It has the woolly young leaves, young wood, and flower stalks of the latter, but the purplish brown fruit of *C. bacillaris.* It is a shrub 10 to 15 feet high and deciduous. Leaves oval, acute, or bluntish at the apex, up to 3½ inches long. Native of the Himalayas; introduced in 1828." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 406.*)

40174. Cotoneaster amoena Wilson.

"A densely branched, stiff-habited evergreen bush of spreading habit, 3 to 5 feet high; young shoots slender but rigid, felted with gray wool. Leaves oval or ovate, tapered about equally to both ends, terminated by a fine point; one-third to three-fourths inch long, one-fourth to two-fifths inch wide; glossy green and with loose hairs above, clothed beneath with a thick, grayish wool; veins in 2 to 4 pairs; stalks one-twelfth to one-eighth inch long. Flowers white, one-fifth inch wide, borne in 6 to 10 flowered corymbs; petals roundish; stamens 20; calyx woolly, with triangular-ovate teeth. Fruit bright red, roundish obovoid, broadest above the middle, one-fourth inch long, packed in umbellike clusters at the end of

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short twigs that have sprung from the growths of the previous year. Native of Yunnan, China; introduced by Wilson about 1904 to the Coombe Wood nursery. It is most closely allied to *C. francheti* among older species, but is dwarfer and stiffer in habit, the leaves smaller, the berries a richer red, especially on the exposed side." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 406.*)

40175. COTONEASTER ZABELI Schneider.

"A deciduous shrub, 6 to 9 feet high; young shoots covered with loose grayish hairs, becoming smooth the second year and dark brown. Leaves one-half to 1½ inches long, half to two-thirds as wide; variable in shape, but usually oval or ovate, mostly blunt to rounded at the apex; but sometimes pointed, the base rounded to truncate; dark dull green above, with loose, appressed hairs, clothed beneath with yellowish gray felt; stalk one-eighth inch long, felted. Flowers in clusters of 4 to 10, small, rose colored; stamens 20; flower stalk and calyx felted. Fruit red, roundish, pear shaped, downy, one-third inch long. Native of western Hupeh, China; introduced in 1907 by Wilson, who described it as the common cotoneaster of the thickets of western Hupeh. It is allied to *integerrima* and *tomentosa;* from the former it differs in its felted calyx, and from both in the more numerously flowered inflorescences." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 416.*)

40176. COROKIA BUDDLEIOIDES Cunningham. Cornaceæ.

"A small tree, with long, narrow leaves, shining above and downy beneath. Flowers in slender panicles. Corolla one-fourth inch long, yellow. Drupe, orange-red. North Island: Mangonui to East Cape. Flowers December. Native name *Korokia-taranga.*" (*Laing and Blackwell, Plants of New Zealand.*)

40177. DEUTZIA LONGIFOLIA Franchet. Hydrangeaceæ.

See S. P. I. Nos. 34533 and 34600 for previous introductions and description.

"A deciduous shrub 4 to 6 feet high; young shoots sparsely scurfy; afterwards smooth, bright brown, peeling. Leaves narrowly oval lanceolate, rounded or tapered at the base, slender pointed, finely toothed; 1½ to 5 inches long, one-fourth to one-half inch wide, upper surface dull grayish green, sprinkled with pale, flat, usually 5 or 6 rayed, stellate hairs; under surface grayish white, covered with a close feltlike layer of many-rayed stellate scales, the midrib and chief veins furnished on each side with few to many white simple hairs. Flowers in corymbose panicles, 2 to 3 inches long and wide, produced in June at the end of short 2 to 6 leaved twigs; each flower is about 1 inch across, rich purplish rose, paling at the margins of the petals. The wings of the inner stamens are deeply bilobed at the top, the anthers set in the notch; calyx lobes linear oblong, persistent, covered like the calyx tube and flower stalks with pale, starry scurf. Fruit one-fourth inch across. Native of western China; introduced by Wilson in 1905. This is one of the finest of the Chinese Deutzias, both in size of flower and richness of tint. It is closely allied to *D. discolor*, but is distinguished by the longer, narrower leaves, more distinctly veined beneath, and especially

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by the simple hairs along the midrib—absent in *discolor;* the wings of the inner stamens are deeply bilobed in *discolor*, but the lobes do not reach up to or above the anther, as in *longifolia*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 483.*)

40178. DIPELTA VENTRICOSA Hemsl. Caprifoliaceæ.

"A deciduous shrub, 6 to 15 feet high; young shoots downy. Leaves oval or ovate-lanceolate, rounded at the base, the apex long and taper pointed, edged with a few gland-tipped teeth, sometimes quite entire; 2 to 6 inches long, three-fourths to 1¾ inches wide; downy on the margins and slightly so on both surfaces; stalks one-eighth to one-third inch long. Flowers produced at the end and in the leaf axils of short side shoots; usually they are solitary in the leaf axil and in a terminal corymb of three. Corolla between tubular and pitcher shaped; 1 to 1¼ inches long, and three-fourths inch wide at the mouth; the tube protruded on one side near the base; 5-lobed, the lobes rounded, and the two upper ones the smaller; deep rose outside, paler within, except in the throat, which is orange colored. Calyx with five awl-shaped lobes, one-third inch long, fringed with short hairs. Flower stalk slender and furnished with several bracts at the base of each flower. These bracts, the largest two-thirds inch long, one-third inch wide, are persistent and become attached to the fruit, which is also covered by the persistent calyx. Distinct from *Dipelta floribunda* in the smaller bellied corolla. Native of western China; discovered and introduced by Wilson in 1904; flowered in the Coombe Wood nursery in May, 1908. It thrives very well, and promises to be an ornamental as well as interesting shrub." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 497.*)

40179 and 40180. EUONYMUS spp. Celastraceæ.

40179. EUONYMUS PLANIPES Koehne.

"A deciduous shrub or small tree, closely allied to *E. latifolius*, and of similar habit and dimensions. The leaves are like those of that species in most respects, but are more coarsely toothed, and the stalk is not channeled on the upper side. The fruit is rosy red and 5-lobed, as in *E. latifolius*, but differs in having the top conical; nor are the wings of each lobe flattened and knifelike as in *E. latifolius*. Except in these respects the two differ but little. Native of Japan; introduced to Kew from the Arnold Arboretum in 1895, as *E. macropterus*; it has borne fruit for several years past, and promises to be as handsome as *latifolius*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 541.*)

40180. EUONYMUS YEDOENSIS Koehne.

"A deciduous shrub or small tree, of sturdy, flat-topped habit, growing 10 feet or more high; branches stiff; young shoots smooth. Leaves obovate, usually broadly so, sometimes oval, tapered at both ends, but more abruptly at the apex, minutely toothed; 2 to 5 inches long, 1½ to 3 inches wide, smooth, strongly veined beneath; leaf stalk one-third to five-eighths inch long. Flowers with styles of varying length. Fruit pinkish purple, about the size of those of *E. europaeus*; seeds with an orange-colored coat, but not much exposed. Native of Japan; named by Prof. Koehne in 1904. It is

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allied to *E. europaeus*, but is distinguished by the brown-purple anthers. I have not seen it in flower, but there is a fine bush in the vicarage garden at Bitton, near Bristol, where its leaves turn a brilliant red in early autumn." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 543–544.*)

40181. HELIANTHEMUM FORMOSUM (Curt.) Dunal. Cistaceæ.

"A low shrub with wide-spreading branches, growing 2 to 3 feet high, but more in width, the young shoots erect, the whole plant gray with short down, intermixed with which are numerous whitish, stellate, or long simple hairs. Leaves oblong, oval, or obovate; one-half to 1½ inches long, one-fourth to one-half inch wide; 3-nerved at the narrowed base, the apex rounded or abruptly pointed. Flowers borne at the end of short side twigs, clustered, but appearing successively; each flower is 1½ inches in diameter, bright rich yellow, each petal with a conspicuous brownish purple blotch near, but not reaching to, the base. Sepals three, ovate, taper pointed, very hairy. Native of central and south Portugal; introduced in 1780; perhaps the most beautiful of all the sun roses we cultivate. It is perfectly hardy, and I have never seen it permanently injured by frost, even 30° to 32°. It is admirable for covering a dry, sunny bank, and remains well furnished with foliage through the winter. It commences to flower in May." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 612.*)

40182. HYDRANGEA BRETSCHNEIDERI Dippel. Hydrangeaceæ.

See S. P. I. No. 38812 for previous introduction and description.

"A deciduous shrub, 8 to 10 feet high, forming a sturdy bush, old bark peeling; young branches smooth. Leaves oblong to ovate, 3 to 5 inches long, 1 to 2½ inches wide; rounded or wedge shaped at the base, slender pointed, regularly toothed; dull and smooth above, hairy on the veins and sometimes over the whole surface beneath. Corymbs flattened, 4 to 6 inches across, with a considerable number of large sterile flowers at the margins; these are three-fourths to 1¼ inches across, the three or four sepals rounded or obovate, white, afterwards rosy. The small, perfect flowers are dull white; flower stalks clothed with erect bristly down. The seed vessels are egg shaped, the persistent calyx forming a raised band round the middle. Native of China; introduced from the mountains about Peking, in 1882, by Dr. Bretschneider. Planted in a sunny position in good soil, it makes a really handsome shrub, flowering in June and July, perfectly hardy and always vigorous." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 624.*)

40183. INDIGOFERA GERARDIANA Wallich. Fabaceæ.

"A deciduous shrub with downy, slightly ribbed branches. At Kew, where it is almost invariably cut back to the ground each winter, it sends up a dense thicket of erect, scarcely branched shoots, 2 to 4 feet high, clothed from top to bottom with leaves. Where the climate is milder the shoots survive, and it then becomes a much-branched shrub, perhaps 6 or 8 feet high. On a wall at Kew it is 10 feet high. Leaves pinnate, 2 to 4 inches long, composed of 6 to 10 pairs of leaflets and an odd one; leaflets three-eighths to five-eighths inch long, obovate or oval, clothed with gray appressed hairs on both sides, the apex notched or rounded and having a short, bristlelike tip. Racemes produced from the leaf axils in succession from below upward, on the terminal part of the shoot. They

40139 to 40201—Continued.

are 3 to 5 inches long, bearing short-stalked, pea-shaped flowers one-half inch long, rosy purple, two dozen or more on each raceme. Calyx downy, with lance-shaped lobes. Pod deflexed when ripe, 1½ to 2 inches long, one-eighth inch wide, cylindric, 6 to 10 seeded. Native of the northwestern Himalayas. Commencing to blossom about the end of June and continuing until the end of September, having also foliage of great beauty and luxuriance, this is one of the most ornamental of late-flowering shrubs. It has the disadvantage of starting late into growth, and it is not until June that the stools become well furnished. For this reason it is not suitable for planting alone in masses. It likes abundant sunshine, and does not flower so freely in dull seasons." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 655.*)

Distribution.—Temperate and subtropical slopes of the western Himalayas from the Salt Range to Kumaon, in India, and west to Afghanistan.

40184 to 40187. Lonicera spp. Caprifoliaceæ. **Honeysuckle.**

40184. Lonicera orientalis longifolia Dippel.
(*Lonicera kesselringi* Regel.)

"It has oblong or oval-lanceolate leaves 1½ to 2½ inches long, rarely more than three-fourths inch wide. Flowers pink, smaller than in *orientalis*, the corolla tube only slightly swollen, stalk one-third inch long. Introduced from Kamchatka in 1888." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 51.*)

40185. Lonicera trichosantha Bureau and Franchet.

"A deciduous bush, of vigorous growth and rounded, dense, leafy habit, probably 8 feet or more high, the whole plant with a pale grayish aspect; young shoots at first downy, becoming smooth later in the season. Leaves oval, often inclined to obovate, rounded or broadly wedge shaped at the base and short pointed or rounded at the apex, 1 to 2 inches long, one-half to 1¼ inches wide; dull gray-green above, paler beneath, both sides at first downy, becoming almost smooth, especially above; stalk one-eighth to one-fourth inch long. Flowers pale yellow, fading to a deeper shade; corolla one-half to three-fourths inch long, hairy outside. Calyx bell shaped, but split into two parts. Berries red. Native of Szechwan, China; discovered by the Russian traveler Potanin. Introduced in quantity by Wilson about 1908. A robust species of the same class as *deflexicalyx* and *quinquelocularis*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 59.*)

40186. Lonicera deflexicalyx Batalin.

"A deciduous shrub of elegant spreading habit; branches often horizontal or drooping, the branchlets in opposite rows; young shoots purple, downy. Leaves 1½ to 3 inches long, scarcely half as wide, rounded at the base, narrowly ovate, pointed, dull green and downy above; grayish and hairy beneath, especially when young; stalk one-third inch long. Flowers in pairs from each axil along the branchlets, all expanding upwards; corolla yellow, five-eighths inch long, downy outside, the lower lip much deflexed, tube shorter than the lobes; stamens hairy at the base; style wholly hairy; stalk one-fourth inch long; fruit orange-red. Native of China and Tibet;

40139 to 40201—Continued.

introduced in 1904. A strikingly elegant, free-growing shrub, very hardy and floriferous, showing its flowers to good advantage by producing them on the upper side of the long, feathered branches. It flowers in May and June, and grows probably 8 feet or so high." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 41.*)

40187. LONICERA QUINQUELOCULARIS TRANSLUCENS (Carr.) Zabel.

"This is very closely allied to and perhaps only a form of *L. quinquelocularis.* The leaves are longer pointed, more markedly ciliate, and the upper surface rougher than in *quinquelocularis;* the corolla tube also is shorter and more protuberant on one side. A sturdy bush, 10 feet high, that flowers freely." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 54.*)

40188. PICRASMA QUASSIOIDES (Don) Bennett. Simaroubaceæ.

"*Picrasma ailanthoides* Planchon. A slender, deciduous tree, 20 to 40 feet high, with very handsome young bark of a reddish brown, conspicuously marked with yellow spots. Leaves pinnate, 10 to 15 inches long, glabrous, consisting of 9 to 13 leaflets, which are glossy green, 1 to 4 inches long, ovate, unequal at the base, round or pointed at the apex, sharp toothed at the margin, and with a very short stalk. Flowers green, one-third inch across, in a lax, branching corymb 6 to 8 inches long, and often nearly as wide; stalks downy. Fruit a berry, about the size of a pea, rather obovoid, with the calyx still attached. This tree, according to some authorities, is a form of *P. quassioides,* a species which, in that sense, is spread in a wild state from Japan and China through the Himalayas as far south as Java. This is, no doubt, extending the specific limits of *P. quassioides* too far. No tree from Java would be as perfectly hardy in our climate as is this. The above description is based on trees growing at Kew which were introduced from Japan in 1890. They have flowered and borne fruit several times, and young plants have been raised from the seed. They have no beauty of flower or fruit, but of the foliage in autumn Sargent observes, 'few Japanese plants I saw are as beautiful as this small tree.' The leaves turn first orange, then scarlet. The whole tree is permeated by a singularly bitter principle. Its nearest ally among hard trees is Ailanthus." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 165.*)

40189 and 40190. PRUNUS spp. Amygdalaceæ.

40189. PRUNUS MAXIMOWICZII Rupr.

"A deciduous tree, up to 20 or 30 feet high, with a slender trunk; branchlets downy, the down persisting through the first winter. Leaves ovate or oval, pointed at the apex, rounded at the base; 1½ to 3 inches long, three-fourths to 1¼ inches wide; doubly toothed, downy on the midrib and veins beneath and with scattered hairs above; stalk one-third to one-half inch long, downy. Flowers rather dull yellowish white, about five-eighths inch across, produced in mid-May on stalked racemes 2 to 3½ inches long, remarkable for the large leaflike bracts with which they are furnished; from 6 to 10 flowers occur on a raceme, each flower on a downy stalk one-half to three-fourths inch long; calyx hairy, with pointed, toothed lobes. Fruit globose, one-sixth inch wide, shining, at first red, then black; ripe in August. Native of Korea [Chosen], Manchuria, and

40139 to 40201—Continued.

Japan; introduced by Sargent to the United States in 1892 and by him sent to Kew in 1895. The tree is interesting and very distinct among cherries because of the conspicuous bracts on the inflorescence, which remain until the fruit is ripe; but neither in flower nor fruit is it particularly attractive, as cherries go. For its autumn coloring it may prove valuable, as it turns a brilliant scarlet both in Japan and North America. It is very hardy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 243.*)

40190. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino.
(*Prunus sargentii* Rehd.)

"A deciduous tree, 40 to 80 feet high, with a trunk sometimes 3 feet in diameter; young shoots smooth. Leaves obovate to oval, drawn out at the apex into a long, slender point; rounded; sometimes slightly heart shaped at the base, sharply toothed, 2 to 4 inches long, about half as wide; quite smooth on both surfaces, often reddish when young; stalk smooth, one-half to 1 inch long, with a pair of glands near the blade. Bracts red, oblong, one-half inch long, edged with small glandular teeth. Flowers 1¼ to 1½ inches across, of a lovely deep blush color, produced two to six together in short-stalked umbels, each flower with a stalk 1 to 1¼ inches long; petals obovate, notched at the broad apex; calyx tubular, with five ovate, pointed lobes one-fourth inch long, smooth and entire; stamens deep rose. Fruit a small black cherry, one-third inch wide. Native of Japan; introduced by Sargent to Kew in 1893. This splendid cherry, probably the finest of the true cherries as a timber tree, is also one of the most beautiful in its blossom. It flowers in April. In June, 1910, I saw the trees first introduced to America in the Arnold Arboretum; they were then laden with an extraordinary profusion of small black cherries. The seeds germinate freely after lying dormant a year." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 250.*)

"*Prunus sargentii* is a large, long-life tree of great vigor, perfectly hardy here in New England and, for these reasons alone, ought to be tried as stock for the flowering cherries of Japan, exclusive of *Prunus pendula*, *P. subhirtella*, and their forms.

"My studies in Japan have convinced me that the failure to succeed with Japanese cherries in western lands is due to their being worked on a stock which, though quick growing, is short lived and not suited to the rigors of such a climate as that of New England. I therefore turn to the Japanese species where vigor and hardiness are proved, *P. sargentii*.

"It has yet to be shown that the Japanese cherries will grow on this particular stock, but such evidence as I have accumulated is most encouraging, and I make bold to prophesy that fully 90 per cent will be found to thrive on *P. sargentii*, but they must be worked high enough to prevent them getting off on their own roots.

"*Prunus sargentii* and its varieties are found scattered in woods on the mountain sides throughout the length and breadth of Japan, but are nowhere very abundant. The type is found from the Nikko region northward. Both the type and its forms are commonly planted, and many fine avenues and groves occur in different parts

40139 to 40201—Continued.

of Japan—for example, at Yoshino near Nara, at Arashigama near Kyoto, Kogami near Tokyo, at Nikko and Chuzenji; at Noboribeten near Muroran, at Onumakoen near Hakodate, etc. The last two mentioned places are in Hokkaido [Hokushu]." (*E. H. Wilson, letter of April 11, 1915.*)

40191 to 40193. Rosa spp. Rosaceæ. Rose.

40191. Rosa webbiana Wallich.

"A graceful shrub of thin habit, 4 to 6 feet high, whose long, slender branches are armed with straight spines one-third to one-half inch long, often in pairs; stems often blue-white when young. Leaves 1 to 3 inches long, usually smooth, sometimes downy, composed of five to nine leaflets; common stalk with tiny prickles beneath. Leaflets obovate, broadly oval, or almost round, one-fourth to three-fourths inch long, toothed toward the end. Flowers 1½ to 2 inches across, pale pink, produced singly on short lateral twigs; flower stalks one-third to one-half inch long, smooth or slightly glandular; sepals about one-half inch long, lanceolate, terminating in a short tail, ciliate; calyx tube is more or less glandular. Fruit pitcher shaped, bright red, three-fourths inch long, apart from the persisting sepals with which it is crowned. Native of the Himalayas, at from 6,000 to 18,000 feet elevation. This delightful rose, so distinct in its thin, graceful habit, its pale yellowish prickles, its tiny leaves, and glaucous young stems, is also very pretty in June when covered with its blush-tinted flowers and in autumn when carrying its bright-red fruits. It can best be propagated by layering, also by seeds when the plant is sufficiently isolated to be safe against cross-fertilization, but is still very rare in cultivation. It has a recently introduced ally in *R. willmottiae*, from western China." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 447.*)

40192. Rosa hugonis Hemsl.

"A bush of rounded habit, 8 feet high and more in diameter; branches slender, sometimes gracefully arching, armed with straight, flattened spines of varying length, which are associated on the barren shoots with numerous bristles. Leaves 1 to 4 inches long, quite smooth. Leaflets 5 to 11, oval or obovate, one-fourth to three-fourths inch long; finely toothed, deep grass green. Flowers 2 inches across, bright yellow, solitary on short lateral twigs; flower stalk smooth, slender, three-fourths inch or less in length; calyx tube smooth, sepals one-half inch long, entire, downy inside. Fruit smooth, nearly round, one-half to five-eighths inch wide, black when ripe, the calyx persisting at the top. Native of western China; first raised at Kew in 1899, from seed sent to England by Father Hugh Scallan (Pater Hugo), a missionary in its native country. It is a most charming rose and the most vigorous of the yellow-flowered species, beautiful even when not in flower for its luxuriant, feathery masses of foliage. It shares with *R. sericea* the distinction of being the earliest of roses to flower, usually by mid-May. It is allied to the Scotch rose, but differs markedly in habit. It is perfectly hardy, free, but neat and not rampant in growth. The spines vary much in character and are often altogether absent from some portions of

40139 to 40201—Continued.

the shoots; the largest are thin, flattened, triangular, one-half inch long, reddish, and translucent." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 429.*)

40193. Rosa sertata Rolfe.

"A shrub of elegant habit, up to 5 feet, perhaps more, high; branches glaucous, graceful, and slender, armed with spines up to one-half inch long, in pairs or scattered. Leaves 2 to 4 inches long, composed of 7 to 11 leaflets, which are stalkless, oval to oblong, sharply toothed; one-third to three-quarters inch long, three-sixteenths to three-eighths inch wide; gray-green above, glaucous beneath; stipules edged with glandular hairs. Flowers few or solitary, on short twigs, 2 to 2½ inches across, flower stalk two-thirds to 1¼ inches long, glandular-hairy or smooth; petals broadly obcordate, delicate purplish rose; calyx lobes ovate-lanceolate, tapering to a long, narrow point, minutely downy, sometimes glandular downy, sometimes smooth; anthers deep yellow. Fruit deep red, egg shaped, three-quarters inch long, the sepals persisting at the top. Native of central China; introduced by Wilson in 1907 and flowered at Kew in June, 1910. It is an extremely elegant and pretty rose, allied to *R. webbiana* and *R. wilmottiae.* From the former of these it differs 'in its laxer habit, its few, slender, straight, stipulary thorns, and its more slender, beaked fruit.' (*Curtis's Botanical Magazine.*) *R. wilmottiae* is smaller in its leaves and flowers." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 443.*)

40194 and 40195. Rubus spp. Rosaceæ.

40194. Rubus giraldianus Focke.

"A vigorous deciduous shrub up to 8 or 10 feet high; its biennial stems much branched toward the summit, pendulous at the ends, covered with a vividly white, waxy covering, not downy, armed rather sparsely with broad-based spines. Leaves pinnate, consisting of usually nine leaflets, and from 5 to 8 inches long; the main stalk downy and armed with hooked spines. Leaflets 1½ to 2½ inches long, three-quarters to 1¼ inches wide, the terminal one the largest; ovate or rather diamond shaped; lateral ones oval-lanceolate; all unequally and rather coarsely toothed, slender pointed, smooth above, white beneath with a close felt. Inflorescence a terminal panicle; the flowers small and of little beauty, purple. Fruit black. Native of China; first found in the Province of Shensi by Giraldi, later in Szechwan by Wilson, who introduced it in 1907. Its claims to recognition in the garden are its remarkably white stems, which are as striking in this respect as those of *R. biflorus*, and its pendulous branches, which give a remarkable fountainlike aspect to the shrub." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 458.*)

40195. Rubus omeiensis Rolfe.

"A large, straggling shrub, with round stems, unarmed, but furnished with small, stellate hairs. Leaves of maplelike form, five or obscurely seven lobed, with a heart-shaped base; 3 to 7 inches long and as much wide; irregularly toothed, stellately downy beneath, less so above; stalk 2 to 3 inches long; stipules one-half to three-quarters inch long, cut up into deep, narrow segments. Panicles many

40139 to 40201—Continued.

flowered, terminal; flowers one-half inch across, with downy stalks; calyx downy, the lobes pointed, triangular; petals purple. Native of western China, and found on Mount Omi by Wilson, who introduced it for Messrs. Veitch, with whom it flowered in August, 1908. It grows up to 6,000 feet elevation and will probably be perfectly hardy. It makes growths 10 to 12 feet long in a season. The stipules are rather remarkable." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 465.*)

40196. STRANVAESIA DAVIDIANA UNDULATA (Decne.) Rehder and Wilson. Malaceæ.

"A low, spreading evergreen shrub, or a tree over 20 feet high, with very downy young branchlets. Leaves leathery, oval-lanceolate, pointed, glossy green, 1½ to 3½ inches long, one-half to 1¼ inches wide; entire, downy only on the midrib and margins; stalk one-third to one-half inch long, downy. Flowers white, produced in June in terminal, hairy-stalked corymbs, 1½ to 2½ inches wide; each flower about one-half inch across; petals soon falling; calyx with five triangular lobes, silky hairy when young; stamens about 20. Fruit brilliant red, of the shape and size of common haws. Native of China; introduced by Wilson for Messrs. Veitch about 1901. Unlike the previous species, this appears to be quite hardy. It flowers with great freedom, but the blossoms last in beauty a very short time. Its great charm as a garden shrub is in its abundant crop of bright-red fruits. The leaves, as in Photinia, turn red sometimes before falling. The specific name refers to the frequently wavy margins of the leaves." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 556,* as *S. undulata.*)

40197. TILIA EUCHLORA Koch. Tiliaceæ.

"A tree as yet about 40 feet high in this country, but probably considerably higher naturally, of graceful, often rather pendulous growth; young shoots smooth. Leaves roundish ovate, oblique and heart shaped at the base, with short, tapered points; 2 to 4 inches long, often more in young trees, and as much or more wide; rich glossy green and smooth above, pale green beneath and smooth, except for tufts of hairs in the axils of the veins; marginal teeth small, regular, and slender; stalk smooth, 1 to 2 inches long. Flowers produced in the latter half of July, three to seven together in cymes 2 to 4 inches long, yellowish white. Floral bract linear-oblong, or narrowly lance shaped, 2 to 3 inches long, one-fourth to five-eighths inch wide, smooth, shortly stalked. Fruit distinctly ovoid, tapered to a point, shaggy, with pale-brown wool, one-fourth to one-third inch long.

"Of doubtful origin; introduced about 1860. In some respects this is the most beautiful of the limes, on account of its bright-green large leaves and pleasing form. It is remarkably free from insect pests. In the summer of 1909, when not only limes but nearly every other tree and shrub was infested with aphides and other pests, I examined specimens of this lime at intervals during the summer and never found a single parasite on the leaves. Yet it is quite uncommon in this country. On the Continent, however, its qualities are better appreciated, and it is being much planted in streets. Its brilliantly glossy, rounded, nearly glabrous leaves and pendulous branches very well distinguish it. It has been suggested that it is a hybrid between *T. cordata* and the scarcely

40139 to 40201—Continued.

known *T. caucasica* found in the Caucasus." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 590.*)

40198 to 40201. VIBURNUM spp. Caprifoliaceæ.

40198. VIBURNUM LOBOPHYLLUM Graeb.

"A deciduous shrub, with young shoots smooth or soon becoming so, dark reddish brown when mature. Leaves ovate to roundish or broadly obovate, abruptly narrowed at the apex to a short point; mostly rounded, sometimes broadly wedge shaped at the base; coarsely toothed except toward the base; 1½ to 4 inches long, seven-eighths to 3¼ inches wide; smooth or downy only on the midrib and veins; veins in five to seven pairs; leafstalk one-fourth to 1 inch long. Corymbs 2 to 4 inches wide, with seven main branches, which, like the secondary ones, are minutely downy and glandular. Flowers white, one-fourth inch across, stamens longer than the corolla, anthers yellow. Fruit bright red, roundish, one-third inch long. Native of western China; introduced by Wilson in 1901, and again in 1907 and 1910. It belongs to the confusing group of red-fruited Asiatic Viburnums containing *wrightii, betulifolium, dilatatum,* etc." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 652.*)

40199. VIBURNUM HENRYI Hemsl.

"An erect, evergreen shrub, becoming 10 feet high, having a treelike habit; branchlets stiff, smooth. Leaves narrowly oval, oblong, or obovate; 2 to 5 inches long, 1 to 1¾ inches wide; shortly pointed, wedge shaped or rounded at the base, shallowly toothed, dark shining green above, paler beneath, smooth on both sides or slightly furnished with stellate down on the stalk and midrib; stalk slightly winged, one-half to three-fourths inch long. Panicles stiff, pyramidal, 2 to 4 inches wide at the base, and about as long; flowers perfect and uniform, white, one-fourth inch across, opening about midsummer. Fruits oval, one-third inch long, at first red, then black. Native of the Patung district of central China, discovered there by Henry in 1887; introduced by Wilson for Messrs. Veitch in 1901. It is distinct among hardy Viburnums through its long, narrowish, nearly or quite smooth leaves, its stiff, thin, erect habit, and especially its pyramidal panicles. At Coombe Wood it has proved quite hardy since its introduction. It was given a first-class certificate by the Royal Horticultural Society in September, 1910, for its beauty in fruit." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 649.*)

40200. VIBURNUM PHLEBOTRICHUM Sieb. and Zucc.

Viburnum phlebotrichum is very distinct from *V. wrightii* in the smaller, narrower, ovate to oblong, shorter stalked leaves, the more numerous, silky, whitish hairs on the veins beneath, the quite smooth and slender-stalked cymes, the purple calyx, and especially the very short stamens. Native of Japan. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 660.*)

40201. VIBURNUM RHYTIDOPHYLLUM Hemsl.

"An evergreen shrub, perhaps eventually 10 feet high and as much through; the stout branches thickly covered with starry down. Leaves ovate-oblong; 3 to 7½ inches long, 1 to 2½ inches wide; pointed

40139 to 40201—Continued.

or blunt at the apex, rounded or slightly heart shaped at the base; upper surface glossy, not downy, but deeply and conspicuously wrinkled; lower one gray with a thick felt of starry down; stalk one-half to 1¼ inches long. Flowers produced on large terminal umbellike trusses 4 to 8 inches across, which form into bud in the autumn and remain exposed all through the winter and until the blossoms expand the following May or June. They are a dull yellowish white, about one-fourth inch in diameter. Fruit oval, one-third inch long, at first red, then shining black. Native of central and western China; introduced by Wilson for Messrs. Veitch in 1900. This remarkable shrub is one of the most distinct and striking, not only of Viburnums, but of all the newer Chinese shrubs. It appears to be quite hardy, and flowers well in spite of the curious habit of forming its inflorescences and partially developing them in autumn. Its beauty is in its bold, wrinkled, shining leaves and red fruits. The flowers are dull and not particularly attractive. It was given a first-class certificate by the Royal Horticultural Society in September, 1907. During that month of the year its fruits are red." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 655.*)

40202. SABICEA sp. Rubiaceæ.

From Lusambo, Belgian Kongo, Africa. Presented by Mr. J. A. Stockwell. Received March 15, 1915.

"*Tomwamwe*, a fruit (berry) that grows in clusters on a vine which resembles very much the honeysuckle of the South. The berry is very fine flavored, somewhat resembling the strawberry, although not the equal of that fruit. It makes a beautiful jelly." (*Stockwell.*)

40203 to 40205.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist in charge, Lamao Experiment Station. Received March 15, 1915.

40203. CUCUMIS SATIVUS L. Cucurbitaceæ. Cucumber.

"The *India* cucumber. Size, large, 22 to 30 cm. long, averaging 26 cm. in circumference; average weight 850 grams; form oblong, cross section more or less triangular; color brown, the surface cracking as the cucumber attains maturity, exposing the flesh and giving it the appearance of being reticulated; surface fairly smooth; flesh perhaps somewhat less tender than the standard cucumber of the Temperate Zone, nevertheless very good; seed abundant.

"The seed of this variety was presented to the Bureau of Agriculture by Mr. A. C. Hartless, superintendent of the Seharunpur Botanical Garden, United Provinces, India, in 1911, and was sown at the end of the rainy season the same year at the Lamao Experiment Station. From the seed saved another sowing was made in January, 1913, together with a large number of imported varieties of cucurbits of all classes. In this trial the *India* showed itself hardier and superior to all the cucurbits planted in the resistance to insect pests, which practically destroyed the rest, notwithstanding frequent application of arsenical sprays. The variety is of vigorous growth and a satisfactory yielder and is unques-

40203 to 40205—Continued.

tionably one of the best varieties adapted to local conditions, everything taken into consideration, that has been introduced into the Philippines.

"A large area has lately been planted to *India* at the Lamao Experiment Station with a view of producing seed for general distribution throughout the Philippines another year.

"India is the original home of the cucumber, and the variety under consideration seems to be an improvement upon the aboriginal form that is especially adapted to tropical conditions.

"According to Mr. Hartless, this cucumber is grown throughout India as a climber during the rainy season. Notwithstanding its extensive cultivation in India, it is a curious fact that this distinct cucumber variety has never received a variety name. Coincident to its wide dissemination throughout the Philippines it has therefore been considered expedient to christen the variety in order to distinguish it from other varieties, and it has been named *India* in honor of the ancestral home of the cucumber." (*Wester, The Philippine Agricultural Review, vol. 7, no. 2, Feb., 1914.*)

40204 and 40205. HIBISCUS SABDARIFFA L. Malvaceæ. **Roselle.**

40204. "*Temprano* roselle, 20 days earlier than other varieties." (*Wester.*)

"Plant of medium vigor and upright growth, branching profusely, rarely exceeding 1.25 meters in height; stems light red; leaves palmately 5-lobate with conspicuously narrow lobes; flowers normal; pollen golden brown; calyx of the same general form as the *Victor*, but smaller, average length 45 mm., width 25 mm., with epicalyx 39 mm. The variety is prolific, and the fruiting season is 20 days earlier than *Victor* and *Rico*.

"When the *Victor* fruited for the first time at Lamao in 1911 one plant was conspicuous for its earliness, and seed was saved from this plant and sown the following year. The early trait of the parent was transmitted to the progeny, and the earliest plant was again isolated and the seed sown in 1913. In harvesting the fruit and seed of the third generation the early habit and other characteristics that distinguish this new strain from its parent, the *Victor*, seem to be sufficiently well fixed to merit its recognition as a separate variety, and it has been named *Temprano* on account of its early habit.

"The *Temprano* is more subject to leaf-blight than any of the other varieties mentioned in this paper, and therefore, on account of its deficiency in vigor, it is not recommended for planting on a large scale. In fact, the *Temprano* is of more value in a subtropical than a tropical country, where early frosts at the approach of the cold season destroy the ordinary varieties before their fruiting season is over." (*Wester, The Philippine Agricultural Review, vol. 7, no. 6, June, 1914.*)

40205. "*Altissima.* Plant of upright habit, vigorous, attaining a height of 2.5, sometimes exceeding 3.5 meters, branching sparsely or not at all; leaf lobes narrow; flowers normal; pollen golden yellow; full-grown calyces 25 mm. long, 22 mm. wide, including epicalyx 27 mm.; calyx lobes thin and fibrous, and thickly covered with short, stiff bristles; seed pod almost totally filling cavity.

40203 to 40205—Continued.

"The above description applies to two varieties, seed of which was received by the Bureau of Agriculture from the Gold Coast, West Africa, in 1911, and which in some respects differ radically from all other forms examined by the writer. They differ from each other in that one kind belongs to the red type of roselle, while the other form is intermediate between the red and the green. They evidently have no economic value on the Gold Coast, for our correspondent forwarded the seed with the remark that it was an 'interesting plant.'

"Because of the fibrous and spiny character of the small calyces of the two forms belonging to *Altissima* they have no culinary value. However, their habit of growth is favorable to the production of long fiber, and according to Mr. M. M. Saleeby, chief of the fiber division of this bureau, the two forms of *Altissima* are far superior to jute and all other varieties of roselle (including four from India) in habit, growth, and yield. As yet, the fiber of the *Altissima* has not been carefully studied, but it is apparently suitable for all uses in which jute fiber is now employed. The commercial possibilities of the fiber of the *Altissima* are now being investigated by Mr. Saleeby; the results will be published in a future issue of the Review.

"In India roselle is grown chiefly for its fiber, and in a limited way it is considered as a food plant in the Old World Tropics, the equatorial belt of the Western Hemisphere, and Australia. According to Mr. W. E. Safford, Bureau of Plant Industry, United States Department of Agriculture, before the advent of artificial refrigeration the wealthy planters in certain parts of Mexico sent Indian runners to the snow-capped mountains in their neighborhood to bring down ice or snow for making roselle sherbet.

"It may be of interest to readers in foreign countries to know that roselle soda water, roselle sundaes, roselle sherbet, and roselle ice cream are now included among the other standard offerings of a similar character in some of the best restaurants and ice-cream parlors in Manila, and it is confidently believed that if the roselle products were advertised and featured in the United States it would be a question of only a short time when their real excellence would win for them general recognition; the culture of roselle would then become an industry of considerable importance among the minor crops of the Tropics and subtropics." (*Wester, The Philippine Agricultural Review, vol. 7, p. 268–269, 1914.*)

40206 and 40207. Malus spp. Malaceæ.

From Albano, Stockholm, Sweden. Presented by Dr. Veit Wittrock, director, Botanic Garden. Received March 16, 1915.

40206. Malus zumi (Mats.) Rehder. **Crab apple.**

"A small tree of pyramidal habit; young wood slightly downy. Leaves ovate or oblong; 1½ to 3½ inches long, three-fourths to 1½ inches wide; tapering or rounded at the base, smooth except when quite young; stalks about 1 inch long. Flowers pink in bud, becoming white after opening, 1 to 1¼ inches diameter, produced in clusters of four to seven; calyx lobes woolly, especially inside; flower stalks 1 to 1½ inches long. Fruit one-half inch diameter, globose, red.

40206 and 40207—Continued.

"Native of Japan; introduced to North America in 1892 by Sargent, and thence to Kew in 1905. It is one of the group of Japanese crabs to which *Pyrus toringo* and *P. sargenti* belong, distinguished by small fruits marked at the apex by the scar of the fallen calyx. It is said to be superior to *P. toringo* as a garden tree in the Arnold Arboretum, being covered there in May by a mass of flowers, and in autumn by 'attractive bright red fruits.' It differs from both its allies in its oblong leaves being only slightly or not at all lobed, and from *P. sargenti* in its wider flowers and less crowded petals. The fruits are larger than the pealike ones of *P. toringo*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 300.*)

40207. × MALUS KAIDO Dippel.

"Perhaps a hybrid between *spectabilis* and *ringo*. It has larger, more deeply colored flowers than the former." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 297.*)

40208. BERBERIS GLAUCESCENS St. Hilaire. Berberidaceæ. **Barberry.**

From Nancy, France. Presented by the director, Botanic Garden. Received March 15, 1915.

"A shrubby species with 3-parted spines one-fourth to two-thirds inch long, brownish yellow in color, leaves subsessile, about one-half to 1½ inches long and one-third to two-thirds inch broad, obovate oblong, obtuse, mucronulate, entire, glabrous, and glaucescent. Flowers globose, about the size of those of *Berberis vulgaris*, all parts very smooth. Found in the woods of the Province of Cisplatina near the border of old Lusitania near the city of Maldonado." (*Saint-Hilaire, Flora Brasiliae Meridionalis, vol. 1, p. 47, 1825.*)

40209 to 40211.

From Nanking, Kiangsu, China. Presented by Rev. Joseph Bailie, University of Nanking. Received March 24, 1915. Quoted notes by Mr. Bailie.

40209. CASTANEA sp. Fagaceæ. **Chestnut.**

"Scions from trees inside of the city of Nanking, and I am not quite sure that they ought not to be grafted before we can expect them to produce true. They are about the largest chestnuts we have in China."

40210. AMYGDALUS PERSICA PLATYCARPA (Decne.) Ricker. Amygdalaceæ. (*Prunus persica platycarpa* Bailey.) **Flat peach.**

"Scions of the *pien t'ao*, or 'flat peach;' early choice."

40211. PRUNUS sp. Amygdalaceæ. **Cherry.**

"Large red."

40212 to 40219.

From Kabul, Afghanistan. Presented by His Majesty Habibullah Khan, Ameer of Afghanistan, through Mr. A. C. Jewett. Received February 23, 1915. Quoted notes by Mr. Jewett, except as otherwise indicated.

40212 and 40213. AMYGDALUS COMMUNIS L. Amygdalaceæ. **Almond.**

"Paper-shell almonds."

40212 to 40219—Continued. (Quoted notes by Mr. A. C. Jewett.)

40214. Elaeagnus angustifolia L. Elæagnaceæ. **Oleaster.**

"*Sinjid* from Kabul."

40215. Morus alba L. Moraceæ. **Mulberry.**

"The dried mulberries form the principal food of the poor people of the mountain districts of Kohistan. In the valleys of Kohistan and around Kabul there are extensive orchards of this mulberry, all irrigated, and the yield seems to be heavy. There is a howl if you cut down a mulberry tree. When the mulberries are ripe, they sweep under the trees and let the fruit fall down and dry them, just as they do the plums in California. For eight months the people live entirely on these mulberries. They grind them and make a flour and mix it with ground almonds. My men come month after month with their shirts filled with them. They can carry in their shirts enough of these dried mulberries for five days' rations. These men are commandeered and they bring their food with them. They get no other food whatever; mulberries and water is the whole diet. They sit down on the rocks, and they lunch and dine on nothing but these dried mulberries."

40216. Pinus gerardiana Wallich. Pinaceæ. **Pine.**

"Pine nuts."

"A moderate-sized evergreen of the inner, dry, and arid northwest Himalayas, generally between 6,000 and 10,000 feet; mountains of northern Afghanistan and Kafiristan; also Hariab district at 7,000 to 11,000 feet." (*Gamble.*)

"The chief product of this species is the almondlike seed, contained in the cones. The cones ripen in October, are plucked before they open, and heated to make the scales expand. The seeds are then removed and are largely eaten by the natives and stored for winter use. In Kunawar they are said to form a staple food with the inhabitants. They are also exported to the plains from the hills of the Punjab, and large quantities are imported annually into India from Afghanistan. The wood is hard, durable, and very resinous, but rarely utilized, since the tree is so highly valued for its seeds." (*Watt, Commercial Products of India.*)

40217 and 40218. Pistacia vera L. Anacardiaceæ. **Pistache.**

"Laughing pistachio from Herat."

40219. Prunus armeniaca L. Amygdalaceæ. **Apricot.**

"Sun-dried apricots from Kandahar."

40220 and 40221. Cydonia veitchii Trabut. Malaceæ. **Pyronia.**

From Algiers, Algeria. Presented by Dr. L. Trabut, Government botanist for Algeria. Received March 19, 1915.

"Different plants from those sent you in 1914, although coming from the same sowing. This is nearer to Pyrus than to Cydonia." (*Trabut.*)

40220. *Pyronia 538–A.* **40221.** *Pyronia 538–B.*

See Journal of Heredity, vol. 7, p. 416–419, September, 1916, for a discussion of these interesting hybrids.

40222. CITRUS BERGAMIA Risso. Rutaceæ. **Bergamot orange.**

From Bronte, Sicily. Presented by Mr. Charles Beek. Received March 25, 1915.

"The Bergamot orange grows all down the coast of Calabria from above Scilla to the end of the boot and is not cultivated in Sicily; it grows all along the seashore and is cultivated intensely, i. e., highly manured and watered with the greatest care." (*Beek.*)

40223 to 40235. PRUNUS BOKHARIENSIS Royle. Amygdalaceæ. **Plum.**

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Garden. Plants received March 20, 1915. Quoted notes by Mr. Hartless.

"Country varieties. This is a race of plums the origin of which has not yet been satisfactorily settled. By some botanists it is supposed to be a distinct species from either the Japanese or European plums. They are undoubtedly much more adapted for semitropical conditions than any other varieties. They can be cultivated with success either in the plains (of northern India especially) or on the hills. Some of them are very good indeed as a dessert, and all can be utilized in cooking and preserving. For general culture in the plains these are to be strongly recommended. In the vernacular they are generally known as *Alubokhara* and *Alucha*. The difference between the two is not very marked; but a practiced person can detect them. The former is much more free growing than the *Alucha*, and the fruits are slightly more oval in shape. No. 1 to No. 6 are the oldest known varieties. Nos. 7 to 14 are termed plums by the malis, but to others are generally classed as *Alubokharas*. They have been collected from various sources in northern India, and as they have distinguishing characters they have been named according to these. They all fruit freely on the plains, coming into fruit about the beginning of May and lasting for nearly two months."

40223. "No. 1. *Alubokhara*. Large. Later than No. 2 [S. P. I. No. 40224]. Good for dessert but not good for cooking."

40224. "No. 2. *Alubokhara*. Small. Earlier than No. 1 [S. P. I. No. 40223]."

40225. "No. 4. *Alucha*. Purple. One of the best in my opinion."

40226. "No. 5. *Alucha*. Red. The best of the *Aluchas*."

40227. "No. 6. *Alucha*. Yellow."

40228. "No. 7. *Alubokhara*. Dwarf early yellow. Good for dessert."

40229. "No. 8. *Alubokhara*. Early large red. Good for dessert."

40230. "No. 9. *Alubokhara*. Early round. Good for dessert."

40231. "No. 10. *Alubokhara*. Kabul Greengage. Is one of the best."

40232. "No. 11. *Alubokhara*. From Ladak. Is better for cooking."

40233. "No. 12. *Alubokhara*. Large red. Good both for dessert and for cooking."

40234. "No. 13. *Alubokhara*. Large yellow. Good both for dessert and for cooking."

40235. "No. 14. *Alubokhara*. Late yellow. Good both for dessert and cooking."

40236. JUGLANS PORTORICENSIS Dode. Juglandaceæ. Walnut.

From Adjuntas, Porto Rico. Presented by Mr. D. W. May, Agricultural Experiment Station, Mayaguez, Porto Rico, who secured the nuts from Mr. Bartolomé Barceló, Adjuntas. Received March 19, 1915.

"There is perhaps but one tree of this kind all around this district, and the people did not seem to know what it was. The owner of the tree informs me that these walnuts mature in April." (*Barceló.*)

40237 to 40258. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. Sweet potato.

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas, Cuba. Received March 22, 1915. Quoted notes by Mr. Roig; yields stated in arrobas (of 25 pounds each) per caballería (33⅓ acres).

40237 to 40243. White group.

40237. "No. 24. *Blanco.* From Luyano, Havana. Yielding 43,930 arrobas per caballería."

40238. "No. 87. *Papa.* From Camaguey. Yielding 10,017 arrobas per caballería."

40239. "No. 93. *Amarrate conmigo.* From Taco Taco, Pinar del Rio. Yielding 15,026 arrobas per caballería."

40240. "No. 124. *Sequito.* From Bayamo, Oriente. Yielding 24,347 arrobas per caballería."

40241. "No. 155. *Rayo.* From Imias, Oriente. Yielding 3,869 arrobas per caballería."

40242. "No. 182. *Santiago.* From El Caney, Oriente. Yielding 22,817 arrobas per caballería."

40243. "No. 200. *Manf.* From Trinidad, Santa Clara. Yielding 29,217 arrobas per caballería."

40244 to 40256. Red group.

40244. "No. 19. *Vuelta-arriba.* From Santiago de las Vegas, Havana. Yielding 25,808 arrobas per caballería."

40245. "No. 34. *Maleta.* From Santiago de las Vegas, Havana. Yielding 84,869 arrobas per caballería."

40246. "No. 49. *Cienfuegos.* From Santiago de las Vegas, Havana. Yielding 28,813 arrobas per caballería."

40247. "No. 57. *Andrinito.* From Santiago de las Vegas, Havana. Yielding 9,130 arrobas per caballería."

40248. "No. 62. *Matojo.* From Cienfuegos, Santa Clara. Yielding 53,000 arrobas per caballería."

40249. "No. 71. *Tuno.* From Taco Taco, Pinar del Rio. Yielding 29,739 arrobas per caballería."

40250. "No. 97. *Manila colorado.* From Taco Taco, Pinar del Rio. Yielding 9,313 arrobas per caballería."

40251. "No. 99. *San Pedro colorado.* From Taco Taco, Pinar del Rio. Yielding 13,434 arrobas per caballería."

40252. "No. 121. *Mulato.* From Santiago de las Vegas, Havana. Yielding 27,304 arrobas per caballería."

40237 to 40258—Continued. (Quoted notes by Mr. J. T. Roig.)

40253. "No. 129. *Botija.* From Nueva Gerona, Isla de Pinos. Yielding 28,696 arrobas per caballería."

40254. "No. 195. *Sabanilla colorado.* From Trinidad, Santa Clara. Yielding 45,174 arrobas per caballería."

40255. "No. 255. *Mambf.* From Camaguey. Yielding 30,469 arrobas per caballería."

40256. "No. 233. *Isla de Pinos.* From San Luis, Pinar del Rio. Yielding 12,521 arrobas per caballería."

40257 and 40258. Violet group.

40257. "No. 21. *Vueltabajero.* From Botanical Garden, Havana. Yielding 36,347 arrobas per caballería."

40258. "No. 227. *Manf morado.* From Camaguey. Yielding 19,217 arrobas per caballería."

40259 to 40294.

From Alicante, Spain. Presented by Señor Gregorio Cruz Valero, engineering director of the Estacion Enologica de Cocoentaina. Received March 18, 1915. Quoted notes by Señor Valero.

40259 to 40279. Zea mays L. Poaceæ. **Corn.**

40259 to 40266. "From the Province of Navarra."

40259. *Aricun*, from the Baztan Valley.

40260. *Rojo de Tudela*, from Tudela.

40261 to 40264. "From Pamplona."

40261. *Hembrilla jirafa.*
40262. *Cuenca.*
40263. *Hembrilla petit.*
40264. *Hembrilla.*

40265. "*Hembrilla del pueblo*, from Aranguren."

40266. "*Rojo de Ardanaz*, from Ardanaz."

40267. "Gathered from the neighborhood of Vitoria, in the Province of Alava."

40268. "From near San Sebastian, Province of Guipuzcoa."

40269 to 40271. "From the region of Galicia, in the Province of Corunna."

40269. *Corriente del pais.*
40270. *Flamenco.*
40271. *Del pais mejorado.*

40272 to 40279. "From the Canary Islands."

40272. From Batan.
40273. From Santa Brigidia.
40274. From Tafira.
40275. From Teror.
40276. From Agaete.
40277. From Telde.
40278. From Jinamar.
40279. From Los Hoyos, Arucas.

40280. Cicer arietinum L. Fabaceæ. **Chick-pea.**

"*Garbanzos*, from the Canary Islands."

40281. Lathyrus sativus L. Fabaceæ.

"*Chicharo blanco de Lanzarote*, from the Canary Islands."

40259 to 40294—Continued. (Quoted notes by Señor G. C. Valero.)

40282. LENTILLA LENS (L.) W. F. Wight. Fabaceæ. **Lentil.**
(*Lens esculenta* Moench.)

"*Lenteja*, from the Canary Islands."

40283 to 40285. PISUM SATIVUM L. Fabaceæ. **Pea.**

"From the Canary Islands."

40283. (No notes.) **40285.** *Arvejas.*

40284. *Arbejon de Lanzarote.*

40286 and 40287. PHASEOLUS VULGARIS L. Fabaceæ. **Bean.**

"From the Canary Islands."

40286. *Frijol.* **40287.** *Judias de color.*

40288 and 40289. VICIA FABA L. Fabaceæ. **Broad bean.**

"From the Canary Islands."

40288. *Habas moras.* **40289.** *Haba Castellana.*

40290. LUPINUS ALBUS L. Fabaceæ. **Lupine.**

"*Altramuces de Hierro*, from the Canary Islands."

40291. LATHYRUS TINGITANUS L. Fabaceæ. **Tangier pea.**

40292. LATHYRUS SATIVUS L. Fabaceæ.

Chicharaca de Hierro.

40293. PHALARIS CANARIENSIS L. Poaceæ. **Canary grass.**

"*Alpiste*, from the Canary Islands."

40294. VICIA MONANTHOS (L.) Desf. Fabaceæ.

"*Lentejos de Tenerife*, from the Canary Islands."

40295 and 40296. QUERCUS spp. Fagaceæ. **Oak.**

From Zacuapam, Vera Cruz, Mexico. Purchased from Dr. C. A. Purpus. Received March 24, 1915.

40295. QUERCUS INSIGNIS Martens and Galleotti.

See S. P. I. No. 39723 for previous introduction and description.

40296. QUERCUS sp.

40297. PYRUS MAMORENSIS Trabut. Malaceæ. **Pear.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received March 22, 1915.

"Seeds of a Moroccan pear, spontaneous, growing in abundance, from the forest of the Mamora. I believe this will make a good stock." (*Trabut.*)

40298. ERAGROSTIS sp. Poaceæ. **Perennial teff.**

From Burttholm, Union of South Africa. Presented by Prof. J. Burtt Davy, Transvaal Maize Breeding Station. Received March 23, 1915.

"Seed of a native species of Eragrostis, a perennial, which is a most excellent summer pasture and hay grass and one which establishes itself very readily on plowed ground, forming pure stands. It prefers a sandy loam, with a rainfall of about 26 inches in summer, and stands about 10 degrees F. of frost in dry weather. I have called it perennial teff and should like you to try it on the poor sandy lands of Florida." (*Davy.*)

40299 and 40300. HIBISCUS SABDARIFFA L. Malvaceæ. **Roselle.**

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamao Experiment Station, through Mr. Paul Popenoe. Received March 25, 1915.

40299. "*Archer* roselle. Plant robust, frequently exceeding 1.60 meters in height, branching freely, all parts of the plant being greenish or whitish; stems nearly smooth; leaf lobes rather narrow; flowers smaller than those in the red types; 'eye' yellowish; pollen pale yellow; stigma green; full-grown calyx greenish white, sparsely covered with short, stiff bristles; average length of calyx 45 mm., width 26 mm., including epicalyx 32 mm.

"The *Archer* is very prolific, and the fruit is somewhat less acid than that of the red types, and the products made from it are whitish or amber colored. In the West Indies a wine is made from this variety that is said to resemble champagne in taste and appearance.

"Seed of the above-described variety was received from Mr. A. S. Archer, Antigua, British West Indies, by the writer early in 1913, and it was tested in the Lamao Experiment Station the same year. It has been named in honor of Mr. Archer, with whom the writer has had the privilege of being in correspondence for many years, and who has greatly assisted the Bureau of Agriculture in the introduction of many useful and decorative tropical American plants.

"The green type of roselle, to which the *Archer* belongs, was described as *Hibiscus digitatus* by Cavanilles in 1790, but it is now considered to be a form of *H. sabdariffa* L." (*Wester, The Philippine Agricultural Review, vol. 7, p. 267–268, June, 1914.*)

40300. "*Victor* roselle. This variety is distinguished by having the unifoliolate leaves of the young plant change early into leaves deeply 5-lobed, these leaf characters remaining until the flowering period, when the leaves become 3-parted or again unifoliolate. The stems and calyces are reddish. The pollen is a golden brown. The calyces average about 45 to 50 mm. in length and 28 mm. in equatorial diameter, tapering toward the apex; the calyx lobes are frequently convolute, and the fleshy spines subtending the calyx lobes are longer and more slender than in the *Rico*, and are curved upward. The *Victor* is more upright in habit than the *Rico* and somewhat earlier in fruiting, due probably to its having been cultivated in Florida for several years." (*Wester, The Philippine Agricultural Review, vol. 5, p. 126, Mar., 1912.*)

40301. ACROCOMIA CRISPA (H. B. K.) C. F. Baker. Phœnicaceæ. **Palm.**

From Cuba. Presented by Mr. C. T. Simpson, Littleriver, Fla. Received March 25, 1915.

"A most striking and beautiful palm, growing in a variety of soils and situations throughout the greater part of Cuba. The stem is seldom more than 8 inches in diameter at the base, but it rapidly expands to 2 feet or more, carrying its size up almost to the handsome, somewhat spiny leaves. In poor soil it seldom attains a height of over 20 feet, but in rich valleys it grows up to 60 feet. The very hard seeds had better be carefully cracked." (*Simpson.*)

40302. BAUHINIA KAPPLERI Sagot. Cæsalpiniaceæ.

From Littleriver, Fla. Presented by Mr. C. T. Simpson. Received March 25, 1915.

"A small tropical tree bearing large, handsome, pinkish flowers variegated with yellow and spotted with red. A rapid grower and abundant bloomer." (*Simpson.*)

40303. ELAEIS MELANOCOCCA Gaertn. Phœnicaceæ. Oil palm.

From Cristobal, Canal Zone. Obtained by Mr. O. F. Cook, of the Bureau of Plant Industry. Received March 30, 1915.

"Large, spreading, low palm with short, thick, erect, or slightly trailing trunk. Grows in low, moist land close to the sea. Closely related to *Elaeis guineensis*, the African oil palm. Oil extracted in small quantities by the natives from the kernels. Appears suitable for plantings in Florida." (*Cook.*)

40304 to 40306. ANNONA spp. Annonaceæ.

From Cajabon, Guatemala. Presented by Mr. W. F. Curley, at the request of Mr. O. F. Cook, of the Bureau of Plant Industry. Received March 24, 1915.

40304. ANNONA RETICULATA L. Custard-apple.

"*Raxpac*, or *Anona morada* of warm climate; red fruit. (*Curley.*)

40305. ANNONA SCLERODERMA Safford. Poxte.

"The fruit is spherical or subglobose, with a hard shell having the surface divided into polygonal areoles by obtuse raised ridges. The seeds are comparatively large, compressed, and smoothly polished. The leaves are coriaceous, oblong, and acuminate, with the secondary nerves not prominent." (*Safford.*)

Mr. O. F. Cook, in his field notes, makes the following entry: "The fruit called by the Kekchi Indians, of Alta Verapaz, *boxte*, or *boshte*, is curious rather than beautiful. The shell is divided into angular depressed areoles by raised ridges. When mature the ridges are dark brown and the areoles between them green. The pulp is readily separable into slender pyramids. These are normally 1-seeded, but in many cases they are seedless. The texture of the pulp is perfect, the flavor aromatic and delicious, with no unpleasant aftertaste. It is much richer than the soursop, with a suggestion of the flavor of the *zapote blanco*, or *matasano* (*Casimiroa edulis*), but not in the least objectionable. It can be eaten most conveniently with a spoon. The most fragrant pulp is close to the rind. The seeds separate from the surrounding pulp more readily than in most Annona fruits."

40306. ANNONA SQUAMOSA L. Sugar-apple.

"*Pac*, or white-meat anona, not the *Tzunun* of cold country." (*Curley.*)

40307 to 40310. LINUM USITATISSIMUM L. Linaceæ. Flax.

From Rosario, Argentina. Presented by Mr. William Dawson, jr., American consul. Received April 29, 1915. Quoted notes by Mr. Dawson.

"I am informed by dealers and growers at Rosario that flax grown in this district is not classified according to the botanical variety. The only classification is that based on the size and quality of the grain, which depends chiefly on the soil and methods of cultivation. Flax is grown in this district exclusively for the seed, the fiber being burned. The following remarks are taken from an article on flax, written by Señor Carlos D. Girola and published in the reports of the agricultural and live-stock census of 1908, volume 3, pages 409 and 410:

"There exists no botanical or even agricultural classification of the varieties of flax grown in Argentina, and seeds vary so greatly according to soils and the conditions under which obtained that it is often difficult to establish by mere ocular examination the current classification which divides linseed into two main groups: *Linos grandes* (large flax or linseed) and *linos pequeños* (small flax or linseed), or *linetas*. The *linos grandes* were originally brought from southern Europe and particularly from the south of Italy. The *linos pequeños*, or *linetas*, seeds of which are smaller than those of the *linos grandes*, came from northern Europe, especially Russia, and resemble in form and color the linseed of Riga, Pskof, etc. The *linos grandes* require a richer soil and more temperate climate than does the smaller variety. The latter stands the cold better and gives satisfactory yields in less fertile soils where the *linos grandes* would not prosper. On account of its suitability for colder climates the *lineta* occupies the southern zone of the belt where flax is cultivated."

40307. "This is an average linseed representing the standard commercial product of the Province of Santa Fe."

40308. "This seed is typical of a high-grade linseed of the *lineta* type (small grain)."

40309. "Classed as a high-grade linseed."

40310. "Seed of a somewhat inferior linseed."

40311 to 40324. LATHYRUS spp. Fabaceæ.

40311 to 40315. From Kew, England. Presented by Sir David Prain, director, Royal Botanic Garden. Received April 27, 1915.

40311. LATHYRUS CIRRHOSUS Seringe.

Glabrous annual. Stem four-sided, wing angled. Leaflets two to three pairs. Flowering peduncles, one to three. Found in the Pyrenees Mountains. (Adapted from *De Candolle, Prodromus, vol. 2, p. 374, 1828.*)

40312. LATHYRUS GRANDIFLORUS Sibthorp and Smith.

Everlasting pea.

Perennial climbing legume. Leaves with one pair of leaflets.

"Stem winged, 4 to 6 feet long; leaflets large, ovate, obtuse, mucronulate, undulate, tendrils branched, short; stipules small; peduncles two to three flowered, longer than the leaves; shield large, obcordate, notched, broad, rose purple, wings dark purple; pod linear, 3 inches. June, July. Larger vine than *L. latifolius*, but weaker and less rampant. Flowers as large as those of the sweet pea. Free flowering, succeeding in any soil, not requiring much light. Adapted to banks, along walk margins in woods, among strong shrubs, and as a covering for rocks." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 888.*)

40313. LATHYRUS POLYANTHUS Boiss. and Blanche.

A glabrous, somewhat glaucous Lathyrus with prostrate or ascending angular stems, large ovate stipules, single-flowered peduncles, and yellow corolla. Found in Syria and Mesopotamia. (Adapted from *Boissier, Flora Orientalis, vol. 2, p. 602.*)

40311 to 40324—Continued.

40314. LATHYRUS SETIFOLIUS L.

A glabrous annual, with climbing or prostrate stems, 2 to 5 cm. (8 to 20 inches) long, slightly winged. Leaves short petioled, the lower without, the upper with branched tendrils. Leaflets long, narrow linear. Stipules hastate, usually linear lanceolate. Peduncles one flowered. Flowers scarlet red. Native of Europe. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 2. p. 1040.*)

40315. LATHYRUS UNDULATUS Boiss.

Perennial climbing legume. Leaves with one pair of leaflets.

"Stems twining, broadly winged; leaflets oblong; peduncles five to six flowered; flowers a mauve red. A form intermediate between *L. latifolius* and *L. rotundifolius.* A somewhat tender species, said to be six weeks earlier than any other." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 888.*)

40316 to 40324. From Edinburgh, Scotland. Presented by Dr. I. Bailey Balfour, Royal Botanic Garden. Received April 26, 1915.

40316. LATHYRUS MONTANUS Bernh.

"Perennial, stem simple, angled, smooth; leaflets five to eight pairs, large, elliptic lanceolate, pointed, glaucous below; peduncles many flowered, a little shorter than the leaves; flowers large, orange-yellow. June, July. Forests of the Alps. A shade-enduring species with flowers erect in spikelike clusters and adapted to borders and rockeries." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 889.*)

40317. LATHYRUS NISSOLIA L.

An erect or ascending nearly glabrous annual, 2 to 4 meters (8 to 16 inches) high, with simple, rarely branched, 4-angled stem. Petioles leaflike, without tendrils. Stipules small, subulate. Peduncles slightly pubescent, one (rarely two) flowered. Flowers purple. Native of Europe. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 2, p. 1023.*)

40318. LATHYRUS SPHAERICUS Retzius.

A small annual, usually not over 75 cm. (2½ feet) high. Leaflets of the upper leaves 8 cm. (3 inches) long and 1 to 6 mm. (one-twenty-fifth to one-fourth inch) broad. Stipules hastate lanceolate, longer than the petiole. Flowers less than 1 cm. (three-eighths inch) long, brick red. Native of Europe. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 2, p. 1037.*)

40319. LATHYRUS SYLVESTRIS L. Flat pea.

See S. P. I. Nos. 20776 and 32415 for previous introductions and description.

40320. LATHYRUS UNDULATUS Boiss.

See S. P. I. No. 40315 for description.

40321. LATHYRUS VENETUS (Mill.) Rouy.

Stem prostrate, usually branching underground. Leaflets broadly oval, subacute, 4 cm. (1.6 inches) long, 2 cm. (0.8 inch) broad, short ciliate. Peduncles thicker than in *L. vernus.* Flowers nearly half as large. Petals clear purple, the standard darker with dark stripes.

40311 to 40324—Continued.

Pods covered with small brown to red glands. Seeds brown. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol 6, p. 1049.*)

40322. LATHYRUS VERNUS (L.) Bernh. **Spring bitter vetch.**

"Perennial, stem simple, somewhat pubescent, 1 to 2 feet long; leaflets two to three pairs, ovate acuminate, light green; stipules entire; peduncles five to seven flowered, shorter than the leaves; flowers blue-violet; keel shaded with green, nodding. May, June. Hills and woods, southern and central Europe. The most popular Orobus; a compact, tufted plant, growing quickly in sun or a little shade; best in deep, sandy loam, in a sheltered position; hardy." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 889.*)

40323. LATHYRUS VERNUS FLACCIDUS Arcang.

"Differs from the species in its narrower and longer leaflets and lanceolate stipules." (*Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 2, p. 1048.*)

Distribution.—Southern France and northern Italy.

40324. LATHYRUS VERNUS (L.) Bernh.

Var. *azureus*. A blue-flowered form.

40325 and 40326. HORDEUM spp. Poaceæ. Barley.

From Chungking, China. Presented by Mr. E. Carleton Baker, American consul. Received April 21, 1915.

"Barley is not grown to any extent in the vicinity of Chungking. As stated by Mr. E. H. Wilson, the botanist, in his book on Szechwan, 'it is only in the mountainous Tibetan borderland that it is largely grown. The Chinese do not care for the meal, and the grain is chiefly used for making spirits and for feeding pigs and other domestic animals.'" (*Baker.*)

40325. HORDEUM VULGARE NIGRUM (Willd.) Beaven.

40326. HORDEUM VULGARE PALLIDUM Seringe.

40327. STUARTIA MONADELPHA Sieb. and Zucc. Theaceæ.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum, which secured it from Dr. H. Shirasawa, Forest Experiment Station, Meguro, near Tokyo, Japan. Received April 28, 1915.

Yama tsia (Japanese). An ornamental small tree or shrub with alternate subflexuous branches; alternate, serrate, ovate-oblong leaves and small white flowers solitary in axils of the leaves. The flower is subtended by a pair of ovate or oblong bracts. Calyx five parted. Corolla regular, five petals. Stamens indefinite, monadelphous. Styles five. (Adapted from *Siebold and Zuccarini, Flora Japonica, p. 181.*)

"A deciduous shrub or small tree, 30 feet high; bark peeling, young shoots clothed at first with fine hairs. Leaves oval or ovate oblong, 1½ to 4 inches long, five-eighths to 1¾ inches wide; wedge shaped at the base, tapered at the apex, toothed; at first hairy on both surfaces (but more densely so above) and at the margin, becoming almost smooth; bright green on both sides; stalk hairy, one-eighth to one-fourth inch long. Flowers solitary in the leaf axils, 1 to 1½ inches across, white, fragrant. Stamens numerous, downy; style united into one column, 5-rayed at the top; bracts, sepals, and petals silky at the back.

"Native of Japan and China; introduced from the latter country by Wilson about 1901. Whether this is quite the same as the Japanese form is not certain, but in both countries they are characterized by hairiness of leaf and shoot, and are thereby distinguished from *S. pseudo-camellia.* Little is known of it in gardens, where only small plants exist, but it does not appear to be equal in beauty to the other species." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 553.*)

40328 to 40330. CHRYSANTHEMUM spp. Asteraceæ. **Chrysanthemum.**

From Erfurt, Germany. Purchased from Haage & Schmidt. Received April 26, 1915.

40328. CHRYSANTHEMUM LEUCOPILODES Hort.

"A subalpine perennial with silver-white leaves and large yellow flower heads. Suitable for rockery. Asia Minor." (*Haage & Schmidt, catalogue.*)

40329. CHRYSANTHEMUM KURDICUM Hort.

40330. CHRYSANTHEMUM MACROPHYLLUM Waldst. and Kit.

A somewhat villous, erect Chrysanthemum with pubescent, nearly sessile, pinnately parted leaves; broadly lanceolate, dentate lobes; composite corymbs; subglobose involvucres; white-ray flowers and whitish disk flowers. Eastern Europe. (Adapted from *De Candolle, Prodromus, vol. 6, p. 58.*)

40331. PYRUS MAMORENSIS Trabut. Malaceæ. **Pear.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received April 24, 1915.

"Seeds of a Moroccan pear from the Mamora. It occurs with the cork oak in the forest of Moroccan Mamora. Very resistant to dryness in the sandy, noncalcareous soils. This vigorous tree will probably form a good stock. The fruit is rather large; the seeds very large." (*Trabut.*)

40332. ACTINIDIA ARGUTA (Sieb. and Zucc.) Planch. Dilleniaceæ.

From Chosen (Korea). Presented by Mr. D. F. Higgins, Peking, China, Received April 26, 1915.

"Korean, *darch.* These seeds are in rather small fruits, on account of the lateness of the season when they were gathered. They were secured through the kindness of Mr. P. C. Kang, of Holkol, Chosen (Korea), a Korean friend of mine. It is characteristic of the spirit of the Koreans that the coolies had to go about 8 miles and over a pass which required an ascent and descent of more than 2,000 feet and would receive but 20 sen (a little less than 10 cents, United States currency) apiece for their day's work (half pay), because they could not secure first-rate specimens of the *darch* fruit." (*Higgins.*)

40333. MEIBOMIA UNCINATA (Jacq.) Kuntze. Fabaceæ.

(*Desmodium uncinatum* DC.)

From San Jose, Costa Rica. Presented by Mr. Otón Jiménez L., Costa Rican National Museum. Received April 27, 1915.

"This seed was secured with much difficulty on the banks of the Rio Torres, because at this inopportune time the inflorescences contain few seeds." (*Jiménez L.*)

40334 to 40336. LATHYRUS spp. Fabaceæ.

From Cambridge, England. Presented by Dr. R. Irwin Lynch, Botanic Garden. Received April 26, 1915.

40334. LATHYRUS HETEROPHYLLUS L.

Plants gray-green, up to 3 m. (10 feet) long. Lower leaves with one pair, upper with two to three pairs of leaflets. Petioles winged on the upper portion and not between the leaflets. Leaflets lanceolate, acuminate. Flowers purple. Throughout Europe. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 6, p. 1017.*)

40335. LATHYRUS PALUSTRIS L. **Marsh pea.**

"Stem slender, 1 to 3 feet long, glabrous or somewhat pubescent, often winged, rather erect; leaflets two to four pairs, oblong lanceolate, acute, 1 to 2 inches long; tendrils branched; stipules small, lanceolate; peduncles two to eight flowered, scarcely longer than the leaves; flowers purplish, one-half inch long; pod 2 inches long. Summer. Northern North America and northern Europe, in moist places. A good bog plant." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 889.*)

40336. LATHYRUS SYLVESTRIS L. **Flat pea.**

See S. P. I. Nos. 20776 and 32415 for previous introductions and description.

40337. PHALERIA BLUMEI (Decne.) Bentham. Thymelæaceæ.

From Lawang, Java. Presented by Mr. M. Buysman, Jardin Botanique. Received April 26, 1915.

"The bark of this shrub is used for cordage; it is a rare species." (*Buysman.*)

Bushy glabrous shrub with opposite nearly oblong leaves, 6 inches long and 2 inches broad. Numerous white or yellowish flowers in terminal heads. Fruit a drupe with a succulent but not very thick epicarp. Found throughout the Malay Archipelago, southern Asia, and the islands of the North and South Pacific.

40338. DIOSPYROS EBENASTER Retz. Diospyraceæ. Black sapote.

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. Received April 23, 1915.

See S. P. I. Nos. 24600 and 39719 for previous introductions and description.

40339 to 40344.

From Horqueta, Paraguay. Presented by Mr. Thomas R. Gwynn. Received April 27, 1915. Quoted notes by Mr. Gwynn.

40339. ABELMOSCHUS ESCULENTUS (L.) Moench. Malvaceæ.
(*Hibiscus esculentus* L.)

"Seed of okra that I have continually raised in this country for the last 25 years, from seed sent from North Carolina."

For previous introductions, see S. P. I. Nos. 33749, 34465, and 37806.

40340. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"*Mamoni.* Tree melon; grows to a height of 5 to 6 yards. Excellent for man, animals, and fowls."

40341. CUCURBITA sp. Cucurbitaceæ.

"*Andiý.* A cross between squash and pumpkin. The plant is of tremendous growth and surpasses anything in the pumpkin line I have ever seen. Yields enormously."

40339 to 40344—Continued. (Quoted notes by Mr. T. R. Gwynn.)

40342. GOSSYPIUM sp. Malvaceæ. **Kidney cotton.**

"*Mandiyu.* I planted this in August, and it is now just beginning to bloom. If a cold snap comes in June or July there will be no yield this year, but the plant, cut down something like a foot from the ground, will produce next year. The plant grows to be some 3 to 4 yards in height and yields to its full capacity for some 8 to 10 years. It is no good in comparison with our cotton."

40343. PSIDIUM GUAJAVA L. Myrtaceæ. **Guava.**

"Fruit about the size of a walnut; green skin and red meat; leaf thick, coarse, and rough. Tree about the size of a grafted apple. It is not cultivated here. There are several varieties of this fruit; I send the one I think the best."

40344. ROLLINIA sp. Annonaceæ.

"*Aretácu.* Luxuriant tree. Fruit small and of little use on account of seed."

40345 to 40348.

Presented by Mr. H. M. Curran. Received April 30, 1915. Quoted notes by Mr. Curran, except as otherwise indicated.

40345. ANACARDIUM sp. Anacardiaceæ. **Cashew.**

"From Para, Brazil. An edible, wild, red-fruited cashew nut. Large tree."

40346. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"From Santos, Brazil. Similar in size to the Philippine papaya."

40347. CHRYSOPHYLLUM CAINITO L. Sapotaceæ. **Star-apple.**

"From Trinidad, British West Indies. Star-apple; purple fruit."

"A fairly handsome West Indian tree, with striking dark-green leaves, which are copper colored underneath. The purplish black, smooth fruit is round in shape, about 2½ to 3 inches in diameter, and usually two to four seeded, the seeds being brown and one-half inch long. In an unripe state the fruit contains a sticky white latex, but when fully matured the white, transparent, jellylike substance surrounding the seed is sweet and agreeable. The fruit when cut across presents a stellate form, the cells with their white edible contents radiating from the central axis; hence the name star-apple. The tree is well worth cultivating for ornamental purposes, or as shade for roadsides, etc. It thrives at Peradeniya, where it was first introduced in 1802. Propagated by seed, and thrives best in deep, rich, and well-drained soil." (*Macmillan, Handbook of Tropical Gardening and Planting, p. 135.*)

40348. POUTERIA CAIMITO (Ruiz and Pavon) Radlkofer. Sapotaceæ. (*Lucuma caimito* Ruiz and Pavon.) **Abiu.**

"From Para, Brazil. Edible sapotaceous fruit; large, yellowish in color."

See S. P. I. No. 37929 for previous introduction and description.

40349 and 40350. LATHYRUS spp. Fabaceæ.

From Groningen, Netherlands. Presented by the director, University Botanic Gardens. Received May 1, 1915.

40349 and 40350—Continued.

40349. LATHYRUS MONTANUS Bernh.

For previous introduction and description, see S. P. I. No. 40316.

40350. LATHYRUS NIGER Bernh. **Black pea.**

"Stem erect or ascending, branched, angled, 1 to 2 feet long; leaflets six to eight pairs, elliptical or ovate, one-half to 1 inch long, light green, turning black when drying; stipules narrow, small peduncles six to eight flowered, longer than the leaves; flowers purple, small. June, July. Mountainous and rocky districts, middle Europe. Slender species, with short rootstocks, succeeding in the shade." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 889.*)

See S. P. I. No. 22554 for previous introduction.

40351. SPONDIAS sp. Anacardiaceæ. **Ciruela.**

From Pacasmayo, Peru. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received May 11, 1915.

"No. 33, March 25, 1915. Fruits scarlet or coral in color." (*Cook.*)

40352 to 40367. LINUM USITATISSIMUM L. Linaceæ. **Flax.**

From Argentina. Presented by Mr. Leo J. Keena, American consul general, Buenos Aires, Argentina. Received May 3, 1915. Quoted notes by Mr. Keena.

"I append herewith the following information in regard to the linseed market, which may be of interest: Linseed in Argentina is cultivated exclusively for the seed, no advantage being taken of the fiber for textile purposes on account of lack of initiative in this country. During the season of 1913–14 the total area under cultivation was 4,396,774 acres, of which 1,375,112 acres corresponded to the Province of Santa Fe, 1,131,950 acres to Cordoba, and the balance equally divided between the Provinces of Entre Rios and Buenos Aires. During the year 1914 the total exports amounted to 938,016 metric tons."

40352. "Taken from a shipment of 70 tons from the station of San Guillermo, on the Central Argentina Railway."

40353. "Taken from a 300-ton shipment from the station of Morteros, on the Central Argentina Railway."

40354. "Taken from a 100-ton shipment from the station of Morteros, on the Central Argentina Railway."

40355. "Taken from a 70-ton shipment from the station of Timbres, on the Santa Fe Railway."

40356. "Taken from a 150-ton shipment from the station of Canada Rosquin, on the Cordoba and Rosario Railway."

40357. "Taken from a 400-ton shipment from the station of San Genaro, on the Central Argentina Railway."

40358. "Taken from a 100-ton shipment from the station of Coronel Bogado, on the Cordoba and Rosario Railway."

40359. "Taken from a shipment of 200 tons at the station of Morye, on the Santa Fe Railway."

40360. "Taken from a 30-ton shipment from the station of Carabelas, Province of Buenos Aires."

40361. "Taken from a 50-ton shipment from the station of Casilda, on the Central Argentina Railway."

40352 to 40367—Continued. (Quoted notes by Mr. L. J. Keena.)

40362. "Taken from a 25-ton shipment from the station of La Pereira, on the Central Argentina Railway."

40363. "Taken from a shipment of 50 tons from the station of Cayugueo, on the Central Argentina Railway."

40364. "Taken from a shipment of 50 tons from the station of Wildermuth, on the Central Argentina Railway."

40365. "Taken from a shipment of 200 tons from the station of Irigoyen, on the Central Cordoba Railway."

40366. "Taken from a 300-ton shipment from the stations of Pilar and Moisesville, on the Santa Fe Railway."

40367. "Taken from a 90-ton shipment from the station of Cruz, on the Central Argentina Railway."

40368. ROSA SERTATA Rolfe. Rosaceæ. **Rose.**

From Kew, England. Presented by Mr. Arthur W. Hill, assistant director, Royal Botanic Gardens. Received March 29, 1915.

For previous introduction and description, see S. P. I. No. 40193.

40369. ZEA MAYS L. Poaceæ. **Corn.**

From Santa Rosita, Guatemala. Presented by Mr. John J. Gruchy. Received March 31, 1915.

"In regard to weevil-proof corn, I regret to say that further experience shows the corn to which you refer to be not entirely weevil proof, although it is more resistant to the weevil than the ordinary flint corns here, probably owing to the fact that it has a much thicker skin. It is a native sweet corn discovered by me when endeavoring to improve a yellow flint corn cultivated here. It was of extremely mixed type, so that a single ear would often contain grains of four or five quite distinct types. As a starter, I separated my seed into lots belonging more or less to the different types represented, and planted them separately for comparison. For several seasons after the segregation new types kept appearing, many of them quite different from the original planting, and finally I observed in some ears scattering grains which looked like sweet corn. I secured two distinct ears of sweet corn, one yellow and the other of a reddish brown color. At this altitude, 4,800 feet, I believe it takes between four and five months to mature. The reddish strain has been lost and I doubt if it reappears. As a roasting ear it is quite sweet, but the skins are so thick that I spit them out. This characterisic is quite undesirable in a sweet corn, but possibly if it could be transferred by crossing to a dent corn, it might help to increase its resistance to weevil while still green in the field." (*Gruchy.*)

40370 to 40376. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

From Wakamatsu, Iwashiro, Japan. Presented by Rev. Christopher Noss. Received March 27, 1915. Quoted notes by Mr. Noss.

40370. "No. 33. *Hikagedaizu* (shade), produces in shady places; used for *miso*."

40371. "No. 34. *Dekisugidaizu* (excessive yield); used for *miso*."

40372. "No. 35. *Kurodaizu* (black); eaten boiled and sugared."

40373. "No. 36. *Nakatedaizu* (medium early); used for *miso*."

40370 to 40376—Continued. (Quoted notes by Rev. C. Noss.)

40374. "No. 37. *Hishidaizu* (water caltrop, alluding to the flattened shape); eaten parboiled and seasoned with shoyu and salt."

40375. "No. 38. Name unknown, cultivated from ancient times in Soma County, Fukushima Ken; used for *miso.*"

40376. "No. 39. *Hakodate-nishiki-daizu* (Hakodate brocade); used for *miso.*"

40377 to 40382. MEDICAGO spp. Fabaceæ.

From Sydney, New South Wales. Presented by Mr. G. Valder, under-secretary and director, Department of Agriculture. Received March 31, 1915.

From the Bathurst Experiment Farm. Selected.

40377 to 40381. MEDICAGO SATIVA L. **Alfalfa.**

40377. Bathurst No. 1.
40378. Bathurst No. 6.
40379. Bathurst No. 13.
40380. Arabian.
40381. Montana.

40382. MEDICAGO SATIVA VARIA (Mart.) Urban. **Sand lucern.**

40383 and 40384.

From Joinville, Brazil. Presented by Mr. Jean Knatz. Received March 29, 1915.

40383. CHORISIA INSIGNIS H. B. K. Bombacaceæ.

"Seeds of a tree which grows very well in many parts of our State." (*Knatz.*)

40384. COLOCASIA sp. Araceæ.

Mangarita. Tubers.

40385 to 40387.

From Nakskov, Denmark. Presented by Mr. R. Wiboltt. Received March 26, 1915. Quoted notes by Mr. Wiboltt.

40385. AVENA SATIVA L. Poaceæ. **Oat.**

"*Abed Danisk Giant No. 45.* The best Danish oat."

40386. HORDEUM DISTICHON NUTANS Schubl. Poaceæ. **Barley.**

"*Abed Binder*, 2-rowed novelty, 1915. This has been tried for a number of years by the Danish State experiment stations and is now acknowledged as one of the earliest and heaviest yielders of all kinds of 2-rowed barley."

40387. HORDEUM VULGARE L. Poaceæ. **Barley.**

"*Abed*, July, 6-rowed novelty, 1915. This has been tried for a number of years by the Danish State experiment stations and is now acknowledged as one of the earliest and heaviest yielders of all kinds of rowed barley."

40388. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. **Sweet potato.**

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas, Cuba. Tubers received March 22, 1915.

"No. 68. *Ciclón*, white group. From Taco Taco, Pinar del Rio. Yielding 37,478 arrobas (of 25 pounds each) per caballería (33⅓ acres)." (*Roig.*)

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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau*.

INVENTORY
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(No. 43; Nos. 40389 TO 40895.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1915 (NO. 43; NOS. 40389 TO 40895).

INTRODUCTORY STATEMENT.

The plant material recorded in this inventory represents collections made and gifts received from different parts of the world while the European war was in progress, and, as showing how little the war has affected the attitude of the scientific men with whom this office is in touch, it may be remarked that specialists in the following countries have furnished plants or seeds in response to requests or upon their own initiative: Italy, France, Holland, England, and their colonies, Russia, China, Sweden, Greece, Spain, Mexico, Argentina, Japan, Colombia, Turkey, Peru, Costa Rica, Ecuador, Chile, Guatemala, Cuba, Liberia, and Paraguay. While the number of shipments falls below that of similar periods before the war and is probably much below what it would have been had there been no war, it is nevertheless a substantial showing of cooperation among the scientific plant enthusiasts of the world.

The most notable collections recorded in the inventory are those made by the Department's explorer, Mr. Frank N. Meyer, during his expedition into the little-known Province of Kansu, in northwestern China. This expedition was made from Peking, from which city Mr. Meyer started on June 29, 1914, his route taking him through the following principal cities of China and enabling him to get a general idea of the field for exploration there: Changte (Honan), Luanfu, Pingyangfu, Wensi, Tungchowfu, Sianfu, Paoki, Fenghsien, Huihsien, Chenghsien, Chiehchow, Siku, Minchow, Taochow, Titaochow, Lanchowfu, Pingliang, Kingchow, and Pinchow.

It is outside the province of this brief introduction even to sketch the accomplishments of this expedition, which lasted seven months, further than to call attention to the plant species which were discovered during its progress, as enumerated in this inventory. Mr.

NOTE.—This bulletin is a record of new or little-known seeds and plants procured mostly from abroad. It is intended for distribution to agricultural experiment stations and the more important private cooperators.

Meyer's character sketches of the things he finds and the uses which he believes can be made of them are always interesting reading, and often they give a glimpse into the circumstances surrounding the discovery and securing of the seeds or other plant material which he sends in to be grown somewhere in this country. As only little more than a year has passed since these collections were sent in, it is manifestly impossible to indicate anything regarding the ultimate success of the various introductions which he made.

One unfortunate circumstance it may not be out of place to record here, as it may have a bearing upon the botany of some of Mr. Meyer's introductions. Although perhaps the most laborious work of the expedition was the collecting and drying of the herbarium specimens, of which he procured a large number, a considerable portion of his collections was lost in the great Galveston storm, which by an unfortunate coincidence struck that city just as his collections were on the "last lap," so to speak, of their long steamer and railroad journey from Kansu to Washington. About a third of his specimens were ruined, especially herbaceous material, but the larger part of the woody specimens were saved, mounted, and are now in the herbarium.

A variety of hull-less oats (S. P. I. No. 40650) and a hull-less barley (S. P. I. No. 40652), two varieties of high-altitude corn (S. P. I. Nos. 40653 and 40654) from western Kansu, near the borders of Tibet, and five varieties of kaoliang collected in the Provinces of Shensi and Kansu, may prove of value in the development of varieties suited to our own high plateaus.

The recent researches of Reimer, which indicate that certain of the Chinese pear species have a remarkable resistance to pear blight, will give an unusual interest to the collection of three as yet undetermined forms of Pyrus from Kansu.

The collection of Chinese jujubes at Chico has been enriched by two varieties (S. P. I. Nos. 40506 and 40877) which Mr. Meyer considers stand second only to a variety which he discovered previously at Paihsiangchen, Shansi. One of these (S. P. I. No. 40506) has fruits as large as a small hen's egg and unlike most varieties is destitute of spines when old and produces trees having trunks 1½ feet in diameter. Another (S. P. I. No. 40878) is used for boiling with millet, or much as we do raisins for baking in bread.

As was expected, Mr. Meyer found that Kansu possesses a great variety of ornamental trees and shrubs. Two species of Viburnum (S. P. I. Nos. 40692 to 40694), three species of Euonymus (S. P. I. Nos. 40696 to 40698), four species of rose (S. P. I. Nos. 40699 to 40702), and a linden (S. P. I. No. 40720) which may make a valuable park tree are among those recorded in this inventory.

At an altitude of 6,000 feet near Lungteh, Kansu, Mr. Meyer found the *davidiana* peach (S. P. I. No. 40722). This is possibly its most western locality in China. Those interested in the breeding of hedysarums for the production of hardy forage varieties or as ornamentals will welcome two species, as yet undetermined, which Mr. Meyer found in Kansu (S. P. I. Nos. 40746 and 40747). The gall nuts of China, which are exported in large quantities from Hankow and are used for a black dye by the Chinese and for tanning purposes by Europeans, Mr. Meyer found to come from the Shensi Province and to be produced by a gall insect which attacks the leaves of a native sumac, *Rhus potanini* (S. P. I. No. 40717), which sumac might easily be grown on cheap lands in our Southern States, as it is not particular as to soil requirements. Both this species and another from the same region, *Rhus javanica* (S. P. I. No. 40716), are handsome ornamentals.

Since the Chinese pistache (*Pistacia chinensis*) has shown itself adapted to the Southwest and avenues of it have been started, it is interesting to have Mr. Meyer's record of a tree at Tsaichiapu (S. P. I. No. 40662) which has a girth of 16 feet, measured 5 feet above the ground. The wide range of territory in which the Chinese elm (*Ulmus pumila*) has succeeded will make Mr. Meyer's introduction of a weeping variety of this species of unusual interest (S. P. I. No. 40507).

Camoensia maxima, the largest flowered legume known, a tropical vine producing fragrant blooms as beautiful as many orchids, has flowered in Cuba from plants distributed from this office, and another introduction (S. P. I. No. 40391) has been made from Angola, where it spreads underground to great distances. It deserves to be naturalized in the hammocks of southern Florida.

Ninety-one species and varieties of the genus Ribes (S. P. I. Nos. 40406 to 40496) has been assembled for the studies of the white-pine blister rust, for which certain species appear to be a secondary host. Among these are a number of very interesting hybrids and new or rare species, such as the hybrid between the black currant and the gooseberry (× *Ribes schneideri*), Wilson's *Ribes longeracemosum*, and the × *Ribes succirubrum*, the plants of which are reported to be in their second generation identical with those of the first generation.

Dr. Eisen has sent in a fig variety from Naples called the Troiaro (S. P. I. No. 40499) which he considers superior to the White Adriatic and declares to be the best table fig in Italy. It requires a more even climate than that of Fresno in which to mature, but is not affected seriously by fall rains. Prof. Savastano, the veteran horticulturist of southern Italy, has sent from his own garden at Acireale, Sicily, what he considers to be the best walnut of the Sorrento type (S. P. I. No. 40394).

Prof. J. Burtt Davy calls attention again to the success in the Transvaal of the Abyssinian teff (*Eragrostis abyssinica;* S. P. I. No.

40535), which he says has become a standard hay crop, teff hay selling for as much as £5 a ton in Johannesburg.

The tabog of the Philippines (*Chaetospermum glutinosum*), seed of which our late collaborator, Mr. William S. Lyon, sent in (S. P. I. No. 40550), represented in the mind of this experienced observer, whose death has recently been announced by the papers and whose contributions to these inventories have been most valuable, a possible stock for citrus fruits.

The begonia, which years ago Prof. I. B. Balfour, of the Edinburgh Botanic Gardens, brought back from the island of Socotra, east of the Gulf of Aden, appears to have been most successfully used in the production of a race of winter-blooming begonias (S. P. I. No. 40526).

Of ornamentals for city dooryards and home gardens a number of new or rare species are represented in this inventory—the yellow-flowered *Clematis tangutica* (S. P. I. No. 40570), the dwarf Chinese box, *Buxus harlandii* (S. P. I. No. 40566), the *Cotoneaster dielsiana* (S. P. I. No. 40575) from central China, *Vitis flexuosa parvifolia* (S. P. I. No. 40600) from the same region, *Primula littoniana* (S. P. I. No. 40857) from Yunnan, and *Pyrus salicifolia* (S. P. I. No. 40497) from Russia.

Apple breeders may be interested in the new species of Malus from Formosa, *Malus formosana* (S. P. I. No. 40619), which is very distinct from all other species of this genus, and asparagus breeders in *Asparagus lucidus* (S. P. I. No. 40617) from the same island, the roots of which are preserved in sugar and called Tenmondo in Formosa.

To assist in a study of the insecticidal properties of pyrethrum, a large collection of species of Chrysanthemum was introduced (S. P. I. Nos. 40511 to 40513, 40542 to 40548, and 40627 to 40644) and tested by the Insecticide and Fungicide Board.

What success will attend the trial in Florida and California citrus groves of *Cracca candida* (S. P. I. No. 40894) and *Cracca villosa purpurea* (S. P. I. No. 40895), two cover-crop plants from Ceylon, remains to be seen. The former appears to be a favorite green-manure crop in that tropical island.

Chinese names in this inventory have been brought, so far as possible, into accord with the best authorities, the geographic names (except when fixed by decisions of the United States Geographic Board) being given in the form accepted by the Chinese Ministry of Communications Postal Guide. Many names of the smaller villages, however, are not listed therein, and in all such cases the location of the village is given with reference to the nearest town mentioned in that reference work.

As heretofore, this inventory has been prepared by Miss May Riley, the botanical determinations of seeds introduced have been made by Mr. H. C. Skeels, and the descriptive and botanical notes arranged by Mr. S. C. Stuntz, who has also had general supervision of this inventory, as of all the publications of this office.

It is with deep regret that we record here the death of Mr. Stephen C. Stuntz, which occurred on February 2, 1918, while this inventory was in press. Mr. Stuntz had charge of the publications of this office for more than seven years. Through an unusual acquaintance with languages and with bibliography he had built up and systematized these publications, which are known throughout the country to thousands of amateur and professional gardeners and practical farmers, and many of the improved appliances and methods which have served to make the work of plant introduction a success were due to his thought and ingenuity.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., February 20, 1918.

INVENTORY.

40389. PYRUS COMMUNIS L. Malaceæ. **Pear.**

From Novospasskoe, Russia. Presented by Mr. A. D. Woeikoff, director, Jardin Expérimental de l'École Horticulture, Cholmy. Received April 7, 1915.

Var. *caucasica.*

40390. PHASEOLUS VULGARIS L. Fabaceæ. **Bean.**

From Foxboro, Mass. Presented by Rev. Father C. N. Field. Received April 2, 1915.

"Flowering beans, grown at St. Augustine's Children's Farm, Foxboro, last year. Quite pretty bunches of flowers, the seeds of several kinds of which were brought me from Jamaica." (*Field.*)

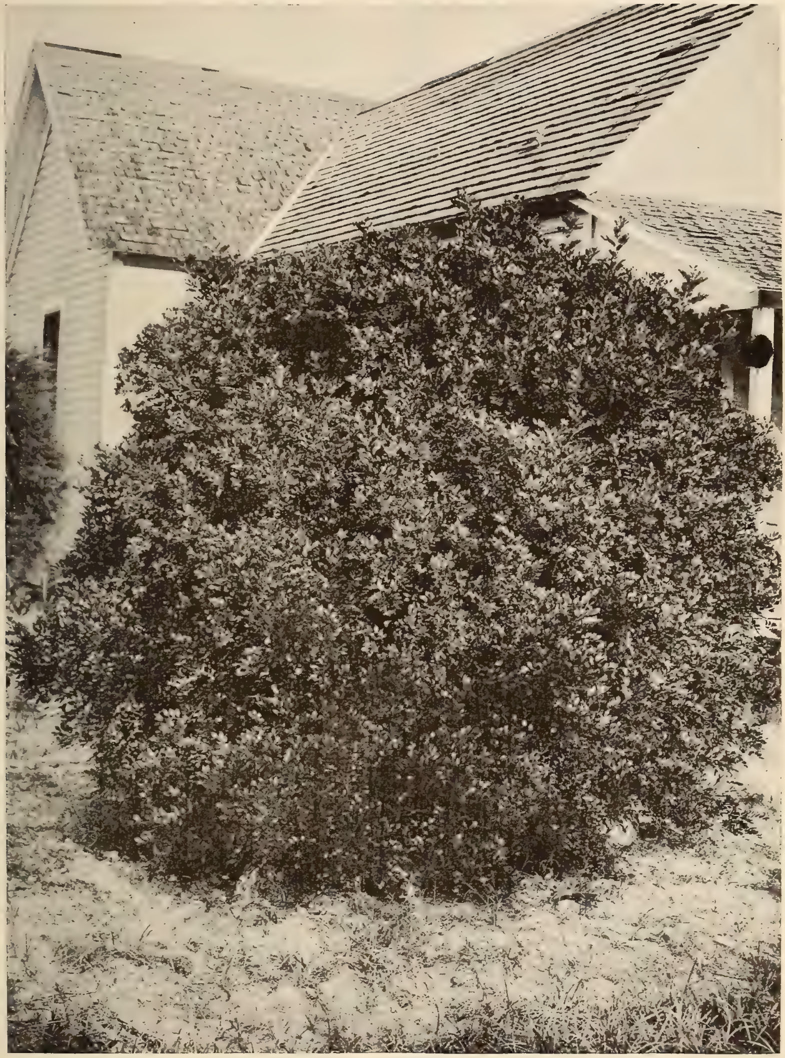
40391. CAMOENSIA MAXIMA Welw. Fabaceæ.

From Loanda, Angola, Africa. Presented by Mr. J. Gossweiler. Received April 7, 1915.

"The plant upon which this genus was founded was discovered in Angola by the late Dr. Welwitsch when in the Portuguese service, and by him it was in consequence named after the famous Lusitanian poet. It is a climbing shrub, 'common in the dense forests of the Golungo Alto, adorning the loftiest trees of the outskirts with its splendid bunches of pendulous milk-white flowers, tinged with gold on the edge of the petals.'

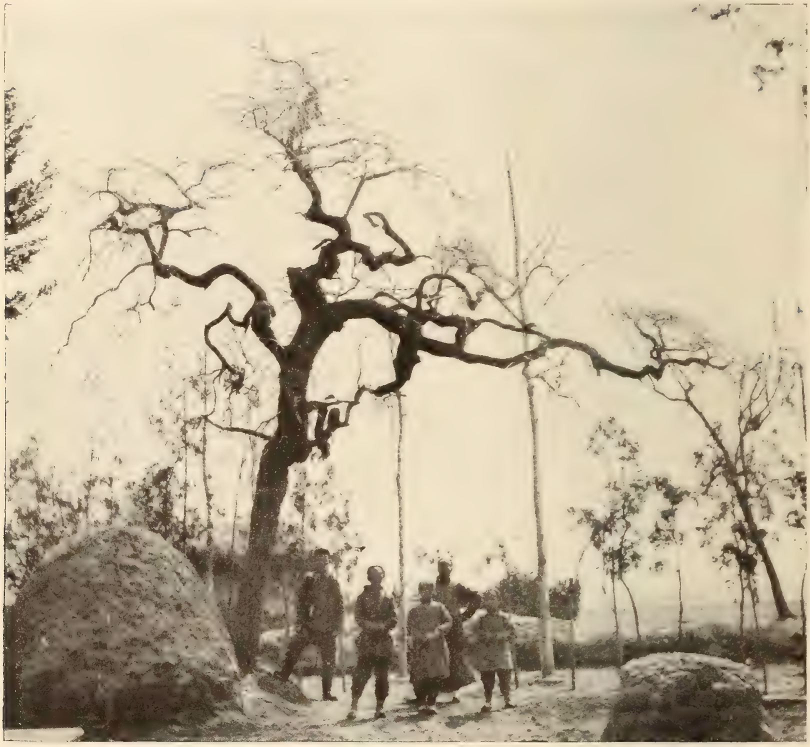
"The specimen before us is slightly puberulous, with long-stalked trifoliolate-acuminate leaves, minute stipules, and close racemes of flowers, which under cultivation are erect rather than pendulous, as originally described and figured, but which, when growing over tall trees, as described by Dr. Welwitsch, might well be pendent, as he described them. The inflorescence and outer portion of the calyx are thickly covered with dense, felted, coarse brown hairs. The bracteoles are about half an inch long, lanceolate, deciduous. The calyx tube, measuring about 2 inches in length, is leathery, cylindric, curved, dividing into a relatively short, irregularly 5-lobed limb, of which the thick segments are imbricate in the bud. The five petals, which are twice the size of the calyx, all have long white, narrow stalks, and all expand above into a spoon-shaped limb, somewhat papery in texture, plicate and crumpled in the bud, reticulate in venation, and edged with a narrow border of rich orange yellow, which Mr. Woodall describes as tipped with gold lace, so delicate and fairylike is the frilled edging. The uppermost petal, or standard, is much larger than the others, and has the inner surface of the disk as well as the margins flushed with yellow. The side petals, or wings, are at first upright and rigid within the standard, but, as the artist remarked while making his sketch, they are endowed with elasticity when touched by the pencil, and after the discharge of the pollen they become drooping. The two lower petals and the stamens are also at first quite rigid, but subsequently fall. The snow-white stamens are shorter than the petals, 10 in number, forming a tube at the base, filamentous above. The narrow, angular ovary is stalked, its stalk adherent to the tube of the calyx for its lower half. The cylindric style is slightly hairy at the upper part, and terminates in a green, cushion-shaped stigma. The flowers have a delicate fragrance, which has been compared to that of vanilla. The yellow color of the edge of the petals is apparently due to the presence of coloring matter in the four or five rows of cells nearest to the margin. Those at the extreme edge are raised into pimplelike elevations, whilst those on the surface of the disk of the petal are flat and sinuous in outline, containing in some cases oil in small quantities and minute starch grains, or some substance faintly colored blue by iodine. The thin texture of the petals causes them to be fugacious, and the golden rim which is so beautiful an adornment to the frilled edge very soon turns to dirty brown. These circumstances detract greatly from the value of the flower in a gardener's eyes, but it must be remembered that the flowers are in clusters and open in succession and that when grown as seen by Welwitsch in Angola they no doubt amply justify his eulogium.

"Mr. Monteiro, to whom we are indebted for the introduction of this and many other African rarities sent by him at different times to Kew from Angola, thus writes of the Camoensia in his interesting book, Angola and the River Congo (MacMillan, 1875): 'It was at Quiballa (a large town situated on a low flat-topped hill on the northern limit of Angola) that we were so fortunate as to obtain specimens of the flowers and a quantity of ripe seeds of the beautiful plant named *Camoensia maxima* by its discoverer, Dr. Welwitsch. We saw it growing along the sides of the road as soon as we left the gneiss formation and entered on the mica slate; but more abundantly in the more bare places on the sides of the hills at Quiballa, in the very hard clay of the decomposed mica slate. The Camoensia grows as a hard, woody bush, with rather long straggling branches covered with fine large leaves and bearing bunches of flowers. Its roots spread underground to great distances and shoot out into other plants, so that on attempting to remove what we thought were nice small plants we always came to a great thick root, which we followed and found to proceed from old bushes at a considerable distance. Half a dozen of the seeds germinated on arrival at Kew Gardens, so that I hope this lovely flower will be shortly in cultivation, a welcome addition to our hothouses.' At Kew the plant behaves exactly as described in the above extract, the bed in which it is planted being a mass of woody roots whence numerous suckers spring. These, however, are not allowed to grow, the specimen being limited to about five stems, the thickest being now nearly 2 inches in diameter and very hard. The longest shoots are about 12 feet in length, and they are almost wholly clothed with bright-green trifoliate leaves. New shoots are developed freely all over the plant, and to keep it from becoming a thick tangle many of these are removed annually. It is planted in a hot, moist stove in a raised border of rich well-drained loamy soil, below which there are several hot-water pipes. The stems are trained on wires close to the roof of the house, which is somewhat flat and faces due south. During bright sunshine the house is shaded with an ordinary canvas blind. This plant has been in this position for about 10 years, and all sorts of experiments have been made to induce it to flower; but although it has always grown most vigorously, it has never shown any signs of flowering before this year. Plants tried in the large palm house and other tropical houses, including the succulent house, were not so successful. If planted in a suitable position in a tropical garden, this plant would soon cover an enormous area. We intend to put in cuttings of the branches which are now in flower, in the expectation that they will respond more readily to treatment for flowers than has been the case hitherto. It would be interesting to hear if the plants in Trinidad and Ceylon have flowered regularly since they first yielded. Probably the exceptional amount of bright sun-



THE ORANGE JESSAMINE (CHALCAS EXOTICA (L.) MILLSPAUGH) IN SOUTHERN FLORIDA (S. P. I. No. 40392).

A small tree or bushy shrub with fragrant white flowers and pointed red fruit a half inch in length. It is one of the most beautiful of all tropical shrubs for formal plantings, as attractive as box, but with the added beauty of exquisitely fragrant flowers and showy red fruit. It is a relative of Citrus, and lemons have been successfully budded on it as a stock. Its very vigorous root system makes it promising for stock purposes in certain regions. (Photographed at the Miami, Fla., Field Station, August 6, 1915; P34FS–m.)



A WEEPING FORM OF THE CHINESE ELM, ULMUS PUMILA L. (SEE S. P. I. NO. 40507.)

The extreme hardiness of this Chinese elm, which has been widely distributed throughout our Northwestern States, will make this picturesque weeping form, which is a rare variety even in China, particularly welcome in that region for use in cemeteries and parks. The specimen shown was photographed by Mr. Frank N. Meyer on an old grave near Fengtai, Chihli, China, Mar. 27, 1908 (P5429FS).

shine enjoyed in this country during the early part of the past summer has a great deal to do with the flowering of the Camoensia." (*Gardeners' Chronicle, ser. 3, vol. 20, p. 597.*)

40392. Chalcas exotica (L.) Millspaugh. Rutaceæ.
(*Murraya exotica* L.) **Orange jessamine.**

From Hongkong, China. Presented by Mr. W. J. Tutcher, superintendent, Botanical and Forestry Department. Received April 7, 1915.

"The orange jessamine is commonly grown in greenhouses on account of its abundant and very fragrant flowers. These are often to be seen along with the mature red fruit, which make a striking contrast with the panicles of white flowers and delicate foliage. The root growth of this species is remarkably vigorous under greenhouse conditions. Lemons can be budded on it and make a rapid growth. It is being tested as a stock for the common citrus fruits in situations in which a vigorous root system is desired." (*W. T. Swingle.* In *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 729.*)

One of the most attractive of all shrubs for formal plantings in frostless regions.

For an illustration of the orange jessamine, see Plate I.

40393. Aleurites fordii Hemsley. Euphorbiaceæ. **Tung tree.**

From Experiment, Ga. Presented by Mr. H. P. Stuckey, horticulturist, Georgia Agricultural Experiment Station. Received April 6, 1915.

"From tree 8, row 10, of nut plat at the Georgia Agricultural Experiment Station. The fruit is of medium size and the tree fairly prolific." (*R. A. Young.*)

40394. Juglans regia L. Juglandaceæ. **Sorrento walnut.**

From Acireale, Sicily. Presented by Mr. L. Savastano, director, Royal Experiment Station. Received April 1, 1915.

"Cuttings from the true Sorrento walnut, collected on one of my properties, where they are the best walnuts, and from small trees." (*Savastano.*)

40395 to 40405.

From Biskra, Algeria. Presented by Mr. Bernard G. Johnson. Cuttings received April 2, 1915. Quoted notes by Mr. Johnson.

40395. Citrus sinensis (L.) Osbeck. Rutaceæ. **Orange.**

"Biskra blood orange."

40396 to 40405. Olea europaea L. Oleaceæ. **Olive.**

"The first four specimens (S. P. I. Nos. 40396 to 40399) are probably the ones most accurate, although I hope they are all true to name. At Biskra, olives are hardly ever planted from cuttings, but spring up fortuitously from seeds and are then grafted or budded. At the Château Landon, at least, I was shown young trees that had been budded to *Zoragi.* I have seen numerous old trees where suckers had been permitted to grow to some size; such are called *Zaboosh.* I have given the Arabic way of writing, although the person that gave them to me was not educated. It is difficult to find learned people among the natives of Algeria. I have transcribed the names as they sound to me. Prof. Trabut says that 'all along the Mediterranean there are different varieties of olives every 50 miles,' so there is a good chance that *Tefahi, Zoragi,* and

40395 to 40405—Contd. (Quoted notes by Mr. B. G. Johnson.)

Boo Shookiya are original of Biskra. Prof. Trabut thinks the oil of *Zoragi* would be useful to blend with cottonseed oil."

40396. "No. 1. *Tefahi* (meaning apple). From the orchard of Amir Ali el Huni. This is the largest fruited of the olives grown at Biskra, but a light bearer."

40397. "No. 2. *Zoragi.* From the orchard of El Hadji Mohammed Ben, El Hadji Mohammed Brahim, who is kebir or village chief at Bab Dharb. This variety seems to be the most common at Biskra; probably 80 per cent or more of all the trees belong to it. Only trees of this variety attain very large size. The tree at M. Maljean's place was over 4 feet in diameter and apparently solid wood. It is a heavy bearer, and the fruit is quite large, though smaller than *Tefahi* (S. P. I. No. 40396). It is used for oil and pickling. Prof. Trabut says 'the oil of *Zoragi* is very thick and heavy and not much appreciated by the natives.' This fault can, however, be remedied by mixing with a lighter oil."

40398. "No. 3. *Tunisiya.* Probably introduced from Tunis. Specimens taken from the garden of Abd Rhozell Ben Babish. Tree grows more slender and taller, with lighter trunk. The fruit is smaller. I have seen but few trees of this variety. Makes a better oil but is a much inferior producer."

40399. "No. 4. *Boo Shookiya?* (Producer of spines; *Boo*, in Arabic, father or producer.) The specimens are from the orchard of El Hadji Mohammed Ben, El Hadji Mohammed Brahim. The main characteristic is that the wood suffers from a disease, and you will notice that nearly all *Boo Shookiya* have this trouble. The fruit is not so round as *Tefahi* or *Zoragi*, but more oval, and has a separate formation at one end resembling a spine, therefore the name. The fruit is used mostly for pickling. The variety is not so prevalent as *Zoragi*, but is quite common."

40400. "No. 5. *Zoragi.* From the orchard of M. Maljean. This tree was exceptionally large."

40401. "No. 6. *Tefahi.* From the property of Swedi Sheik Swedi."

40402. "No. 7. *Zoragi.* From the Château Landon. All the young trees there had been grafted to *Zoragi.*"

40403. "No. 8. *Boo Shookiya.* From the property of El Hadji Jazeneb Medani. These specimens were apparently freer from the disease, but not the trees."

40404. "No. 9. *Tefahi.* From the property of El Hadji Boo Sitta."

40405. "No. 10. *Zoragi.* From the Babesh property (one of the richest in Biskra)."

40406 to 40496. Ribes spp. Grossulariaceæ.

From Paris, France. Purchased from Mr. Maurice Vilmorin. Cuttings received April 1, 1915. Secured for the use of the pathologists of the Bureau of Plant Industry in their studies of the relationships between this genus and the white-pine blister rust.

"Various species of Ribes and Pinus imported from other countries for the use of the Office of Forest Pathology have been secured for the purpose of carrying on much-needed critical experimental work upon the white-pine blister rust. This disease attacks the 5-needled pines in one stage, and has as alternating hosts the various species of Ribes. The exact limitation of the disease upon the species of either of these genera is at present unknown. So far as tested all Ribes have taken the disease. The securing of results with the pines is much slower, but there is good reason to believe that all 5-needled pines will serve as hosts for the disease. Many foreign Ribes and pines are not available in this country from seeds, cuttings, or plants; hence the necessity of importing small numbers of them. This disease is so well established in one section of this country at present and threatens such tremendous timber values, both in the East and the West, that it is important that any resistant species of either pine or Ribes be known as soon as possible, with a view to the extensive use of this species in future in place of the more susceptible ones. For this reason an effort is being made to secure specimens of all foreign species of Ribes and 5-needled pines." (*Dr. Perley Spaulding.*)

Numbers quoted are those of the Maurice Vilmorin Fruticetum.

40406 to 40409. RIBES spp.

40406. "7378."

40407. "7402."

40408. "7488."

40409. "7530."

40410. RIBES MAXIMOWICZII Batalin.

"7555 V."

"(Wilson No. 958a.) From thickets, Washan, western Szechwan, altitude 1,800 to 2,500 meters. August, 1908." (*Wilson.*)

40411 to 40413. RIBES spp.

40411. "7555 F."

40412. "7555."

40413. "7477."

40414. RIBES AFFINE H. B. K.

"7472."

"Shrub 2 to 3 meters in height, young shoots glabrous or subpubescent, the year-old shoots shining, clear red-brown. Leaves rather small or medium, rounded, 6 cm. long and broad, 3 to 5 lobed, with lobes sometimes obtuse and little developed, base truncate or cordate, glabrous or subpubescent, even glandular above, subpubescent or pubescent below. Racemes very variable, short and rather crowded, medium or rather long up to 12 cm., in this case loose with about 15 flowers. Sometimes the racemes are branched and 20 cm. long (*R. multiflorum* Kunth). Flowers medium, subcampanulate, white or a little washed with rose. pubescent, not glandular, odorous. Fruit as large as a currant, round, black, shiny, covered with a withered flower, with regularly reflexed sepals. Pulp colorless, not juicy, containing 15 rather small ovoid or angular seeds. Native of Mexico in the high mountains in the Federal District and elsewhere. It bears in Mexico the name of *Ciruelillo.*" (*E. Janczewski, Monographie des Groseilliers, p. 330.*)

40415. RIBES ALPESTRE COMMUNE Janczewski.

"7555 M–A."

"(Wilson No. 277 A.) From thickets, Fanghsien, western Hupeh, at altitudes of 2,100 to 2,250 meters. September, 1907." (*Wilson.*)

40406 to 40496—Continued.

40416 and 40417. Ribes alpinum L. **Alpine currant.**

40416. "7375."

"A deciduous unarmed shrub, reaching in gardens 6 to 9 feet in height and as much or more in diameter, of dense, close habit; young twigs shining, and at first more or less glandular. Leaves broadly ovate or roundish, 3 and sometimes 5 lobed, the lobes coarsely toothed, the base straight or heart shaped, with five radiating veins; upper surface with scattered bristly hairs, the longer one usually shining and more or less hairy on the veins; one-half to 1½ inches long and wide; stalk glandular-downy, one-fourth to one-half inch long. Flowers unisexual, the sexes nearly always on separate plants, produced in the axils of bracts longer than the flower stalk, greenish yellow; the males on small, erect, glandular racemes 1 to 1½ inches long, the females fewer and on racemes half as long. Currants red, not palatable. Native of the northern latitudes of the Old World, including England and Scotland. The largest specimens I know of form part of the old hedge on the east front terrace of the old hall at Troutbeck; according to a letter at Kew they are treelike, 15 feet high, and not less than 300 years old. Although this currant has no special beauty of flower or fruit, it makes a very neat and pleasing shrub, admirable for shady places. Occasionally plants with perfect flowers may be found." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 397.*)

40417. "7375 B." Var. *sterile.*

"The so-called var. *sterile* appears to be merely the normal male-flowered plant. None of the forms of *R. alpinum* need a rich soil. They retain the neat, compact habit, which is their greatest merit, in rather poor soil. The yellow-leaved forms color best in full sun." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 398.*)

For further description, see S. P. I. No. 40416.

40418. Ribes americanum Miller. **Currant.**

"7345."

"This shrub is unarmed, and closely allied to the common black currant, which it resembles in having 3-lobed or 5-lobed leaves, with a coarse irregular toothing and a deeply heart-shaped base, and in possessing the same heavy odor, due to yellowish glands on the lower surface. The fruit also is black. The American species, however, is quite distinct in the flowers; these are nearly twice as long, more tapering and funnel shaped, and yellow. Moreover, the bract from the axil of which each flower springs on the raceme is longer than the stalk. (In *R. nigrum* it is small and much shorter than the flower stalks.) Native of eastern North America from New Brunswick to Virginia, Kentucky, etc.; introduced in 1729. As a garden shrub, the only quality which recommends this currant is that its foliage becomes suffused with brilliant hues of crimson and yellow in autumn. For this quality it is sold in nurseries, often as *R. missouriense*—wrongly, for the true plant of that name is a gooseberry with spiny branches." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 398.*)

40406 to 40496—Continued.

40419. Ribes roezli Regel. **Gooseberry.**

"7535." This species is described by Bean as *Ribes amictum.*

"A deciduous armed shrub, 3 to 6 feet high; young shoots downy. Leaves one-half to 1 inch wide, roundish or kidney shaped in general outline, 3 or 5 lobed, the lobes often with sharp teeth; more or less downy on both faces, especially beneath; stalk one-third inch long, usually downy and sometimes glandular-hairy. Flowers solitary or in pairs, on a short downy, often glandular stalk, pendent. Calyx purplish crimson, downy; the tube cylindrical, one-fourth inch long; the sepals one-third inch long; petals rosy white, erect, shorter than the sepals. Berry purple, one-half inch wide, covered with slender prickles. Native of California. This pretty and curious gooseberry is not common in cultivation, the plant that has been distributed for it from nurseries being as a rule either *R. lobbii* or *R. menziesii.* Its nearest ally is *R. cruentum.* The specific name (*amictum*) refers to the shape of the bract surrounding the base of each flower, which resembles the amict, or hood, worn by Roman Catholic clergy at mass." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 398.*)

40420. × Ribes arcuatum Jancz. **Gooseberry.**

"7503."

"*Gracile* × *rotundifolium.* Shrub 1½ meters high with long, slender more or less arched branches, bristly, spines none, the nodal spines weak, up to 5 mm. long, wanting here and there. Leaves rather small, rounded, oblong, 3 to 5 lobed, up to 5 cm. in width, truncate or rounded at the base, subglabrous, resembling those of *R. rotundifolium.* Flowers pale, or a little washed with purple, glabrous, rather small. Fruit round, the size of a large currant, dark purple, with a light bloom, taste of that of *R. grossularia.* Ripens in the middle of July. Its habit, leaves, spines, as well as the shape of the flower, above all the petals, resemble very much *R. rotundifolium*, but it is even more vigorous and hardy, its racemes and stamens are even more short, the pollen compound, the fruit deep purple and not green. After repeated comparisons, we believe that it is a hybrid, *gracile* × *rotundifolium* and not *divaricatum* × *gracile* as we had previously thought." (*E. Janczewski, Monographie des Groseilliers, p. 497.*)

40421 and 40422. Ribes aureum Pursh. **Currant.**

40421. "7305. Var. *chrysococcum* Rydb."

The species is described as follows: "A deciduous, lax-habited, spineless shrub, 6 to 8 feet high, producing a crowded mass of stems which branch and arch outward at the top; young shoots minutely downy. Leaves usually 3 lobed, often broadly wedge shaped or palmate, the lobes coarsely toothed; three-fourths to 2 inches long, as much or more wide, pale green on both sides, and smooth, or soon becoming so; stalks smooth or downy, one-half to 2 inches long, very variable in length compared with the blade. Flowers spicily fragrant, bright golden yellow, appearing in April in semipendulous racemes 1 to 2 inches long, each flower with a tubular calyx one-half inch long; the spreading lobes one-fourth to three-eighths inch long; bract at the base of the flower stalk longer than the latter. Fruit

40406 to 40496—Continued.

black-purple, round, smooth, one-third inch in diameter. Native of the central United States; introduced in 1812. This species and *R. sanguineum* are by far the most attractive of the currants in their blossom, and it is very distinct among them in its long, tubular, yellow calyx." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 398–399.*)

The so-called variety *chrysococcum* is simply a yellow-fruited form.

40422. "7305." Typical *Ribes aureum.*

See S. P. I. No. 40421 for description.

40423. Ribes fasciculatum Siebold and Zuccarini.

"7540."

"A deciduous, unarmed shrub, 3 to 5 feet high; young shoots finely downy. Leaves 3 to 5 lobed, the largest 2 inches long, 2½ to 3 inches wide; the lobes coarsely toothed, usually more or less downy; stalk downy and with feathered bristles near the base. Flowers unisexual, the sexes on separate plants. Males clustered four to nine together in a stalkless umbel—i. e., each flower is on its own stalk without uniting on a common one—yellow, fragrant, smooth; females usually in pairs, sometimes three or four. Fruits erect on a stalk one-fifth inch long, round, one-third to one-half inch diameter, smooth, bright scarlet. Native of China, Japan, and Corea, and distinct from all other species in cultivation in having the flowers clustered in fascicles.

"Var. *chinense* Maximowicz (*R. billardii* Carr.) is a taller shrub, partially evergreen, more downy than the type. The fruits of both are ornamental, and remain long on the branches." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 401.*)

40424. Ribes burejense F. Schmidt. **Gooseberry.**

"7532."

"A small shrub covered with copious fine prickles; blooms as early as *R. aciculare.* Leaves sparingly pilose, somewhat glandular-setaceous. Inflorescence pale or reddish. Calyx small, reflexed. Corolla white, triangular. Stamens longer than the corolla. Manchuria, northern Corea, northern China." (*C. K. Schneider, Handbuch der Laubholzkunde, vol. 2, p. 984, 1912.*)

40425. × Ribes carrierei Schneider. **Black currant.**

"7358. *Glutinosum* var. *albidum* ♀ × *nigrum* ♂."

"Vigorous shrub, 1½ meters high, without the disagreeable odor of the black currant. Young shoots pubescent, rather large and stiff. Buds ovoid-oblong, of good size, but smaller than those of *R. glutinosum*, with herbaceous greenish scales a little touched with red. Leaves of medium size or rather large, up to 11 cm. long and 12 cm. wide, ordinarily trilobate, with the middle lobe usually as predominant as in the black currant, the base cordate, often asymmetrical, pubescent on the nerves and dotted below with small sessile glands. Leaves falling late. Racemes horizontal up to 8 cm. in length, loose, with 10 to 15 flowers. Buds almost red. Flowers medium, flesh colored, tomentose, and glandulose. Fruit round, as large as a currant, black, not pruinose, entirely similar to that of the black currant, which it also resembles in taste. Ripens in July and August. *R. carrierei* is a chance hybrid which was found among the seeds of *R. glutinosum* var. *albidum* by Billard at Fontenay aux Roses,

40406 to 40496—Continued.

and was named *R. intermedium* by Carrière in 1867. This name not being tenable because of the *R. intermedium* Tausch, 1838, Schneider changed it to *R. carrierei*. *R. carrierei* is intermediate between its parents. From *R. glutinosum* it draws the vigor, the size of the buds, the raceme, the bractlets, the forms and the coloring of the flowers and the small rounded glands; from *R. nigrum*, the form of the leaves, of the anthers, and of the pistil, as well as the fruits ripening rather early." (*E. Janczewski, Monographie des Groseilliers, p. 488.*)

40426. RIBES PETRAEUM CAUCASICUM (Bieberstein) Jancz.
Caucasian red currant.

"7425."

"Shrub 1 to 3 meters, with young shoots almost always pale, usually glabrous, rarely dotted with glands or with glandular hairs. Buds a little larger than in *R. rubrum*, colored with dark brown already at the end of May, and easily distinguished at this time. Leaves usually rounded, up to 15 cm. long and broad, 3 to 5 lobed, rarely trifid, with lobes lengthened and subacute, or short and obtuse, with base truncate, subcordate or very deeply cordate, smooth or roughly rugose, glabrous, or subpubescent, even dotted with glandular hairs or subsessile glands, shiny or dull above, glabrous, subpubescent, or pubescent beneath. Flowers subcampanulate, whitish, salmon colored, or purple, glabrous, or subpubescent. Fruit more or less compressed at the ends like a bergamot pear, red or blackish purple crowned with a withered flower with circular insertion. Flesh juicy, colored, more or less acid, resembling a little the bilberry (*Vaccinium vitis-idaea*) in its taste. Ripens in July. Germination slow, in six to eight months. Native of the high mountains of Europe and North Africa (summit of the Atlas), and almost all of Siberia, even as far as the River Indigirka, perhaps even to the Okhotsk Sea. Inhabiting so great a space, *R. petraeum* presents varieties which are distinguished by their habit, foliage, racemes, color and form of flower, and coloring of the fruit. Among these is the variety *caucasicum*. Shoots glabrous or subglabrous. Leaves rounded, up to 13 cm. broad and 12 cm. long, ordinarily 5 lobed, the lobes little developed, subobtuse, with base very deeply cordate, smooth, subglabrous, or pubescent. Racemes sometimes lengthened, even up to 10 cm. Flowers reddish. Receptacle furnished with five tubercles below the petals. Fruits red or blackish purple. From the Caucasus." (*E. Janczewski, Monographie des Groseilliers, p. 290.*)

40427. RIBES CURVATUM Small. Gooseberry.

"7428."

"A low, deciduous, bushy shrub, less than 3 feet high; the shoots smooth, purplish, armed with slender, simple or triple spines. Leaves roundish, usually 1 inch or less in diameter, 3 to 5 lobed, toothed, slightly downy; stalk slender, downy. Flowers produced singly or in pairs (rarely more) on pendent stalks, white; calyx bell shaped with linear, much reflexed sepals one-fourth inch long; petals very short, white; ovary covered with resinous glands; stamens one-fourth inch long, erect, both they and the style downy. Fruits globose, smooth, one-third inch across, purplish. Native of the southeastern United States, apparently hardy. I brought plants from the Arnold Arboretum to Kew in July, 1910, which, so far as I am aware, were the first introduced into this country. It is closely allied

40406 to 40496—Continued.

to *R. niveum*, which it resembles in its white flowers and downy style and stamens, but the glandular ovary and often glabrous anthers are different. *R. curvatum* is also much dwarfer in habit, and comes from the opposite side of North America." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 401.*)

40428 to 40431. Ribes diacantha Pallas.

40428. "7555 G."

"A deciduous shrub, 4 to 6 feet high, armed with spines in pairs one-eighth to one-fifth inch long, or sometimes unarmed; young shoots not downy. Leaves obovate or rounded; often 3 lobed and lobes coarsely toothed; three-fourths to 2 inches wide, the base ordinarily wedge shaped, but sometimes rounded, quite smooth; stalk one-fourth to five-eighths inch long, more or less furnished with bristles. Flowers unisexual, the sexes on different plants. Males yellowish, in erect glandular racemes. Fruit roundish, oval, about as big as a red currant, smooth, scarlet red. Native of Siberia, Manchuria, etc.; introduced in 1781. This shrub, which has no particular merit, resembles *R. alpinum* in the plant being one sexed, but differs in having prickles and in the markedly wedge-shaped leaves. In having spines, and flowers in racemes, it unites the characters of the currants and gooseberries, but its affinities are with the former." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 401.*)

40429. "7385."

For description, see S. P. I. No. 40428.

40430. "7385 E. From Transbaikal."

For description, see S. P. I. No. 40428.

40431. "7385 ♂."

For description, see S. P. I. No. 40428.

40432 to 40434. Ribes fasciculatum Siebold and Zuccarini.

40432. "7370. Var. *chinense* ♀."

For description, see S. P. I. No. 40423.

40433. "7370 A. Var. *chinense* ♀."

For description, see S. P. I. No. 40423.

40434. "7370 B. Var. *chinense*."

For description, see S. P. I. No. 40423.

40435. Ribes americanum Miller.

"7348."

See S. P. I. No. 40418 for previous introduction and description.

40436. Ribes fragrans Pallas.

"7340."

"Small shrub, from 50 to 70 cm. high, with young shoots richly glandular, glabrous, or pubescent. Plants very odorous, with an agreeable odor resembling that of balm (Pallas). Leaves leathery, rugose, rounded reniform, up to 5 cm. long and 6 cm. broad, trilobate, with lobes little pronounced, ovoid, or rounded, subcordate at the base, richly glandular, glabrous, or pubescent below. Flowers white, basin shaped, glandular, or pubescent. Fruit as large as a large currant, red according to Pallas, black according to Turczaninow, or whitish according to Bunge. Very

40406 to 40496—Continued.

tasty, according to Pallas. On the herbarium specimens we find it brownish and pale. Native of Siberia and northern Manchuria, on exposed rock in the sun or in the woodlands in the high mountains of Altai, Urugdei, Ssoyoutes Mountains and in the extreme east of Siberia up to the Okhotsk Sea. *R. fragrans* is a neighbor of *R. hudsonianum* and *R. dikuscha*, but it is well distinguished by the rounded kidney-shaped leaves, leathery and rugose; besides, it is an alpine or subalpine plant of small size and very odorous. Its variety with pubescent leaves has been described by Bunge under the name of *R. graveolens*. It is smaller in all its parts than the Pallas type." (*E. Janczewski, Monographie des Groseilliers, p. 343.*)

40437. RIBES BRACTEOSUM FUSCESCENS Jancz. **Black currant.**

"7336."

This species is described as follows: "An unarmed deciduous shrub 6 to 8 feet high; young shoots smooth, except for a little loose down at first. Leaves handsomely 5 or 7 lobed, 3 to 7 inches (sometimes more) wide; the lobes palmate, reaching half or more than half the way to the midrib, sharply and irregularly toothed; dotted with resin glands beneath; bright green and soon quite smooth above; stalk slender, often longer than the blade, smooth except for a few bristles at the base. Racemes produced in May, erect, slender, up to 8 inches long. Flowers numerous, greenish yellow, erect, one-third inch across, each on a slender, slightly downy stalk about one-fourth inch long. Currants erect, resin dotted, globose, one-third inch diameter, black with a blue-white bloom.

"Native of western North America; discovered by Douglas in 1826. An interesting species of the black currant (*nigrum*) group, very distinct in its large maplelike leaves (occasionally 10 inches across) and long, slender, erect racemes. Rarely seen but quite hardy at Kew." (*W. J. Bean, Trees and Shrubs Hardy in the British Ises, vol. 2, p. 399.*)

40438. × RIBES FUTURUM Jancz. **Red currant.**

"7423. *Vulgare macrocarpum* ♀ × *warszewiczii* ♂."

"Robust shrub, young shoots stained with red, glabrous, sometimes dotted with a few glandular hairs. Leaves rather large, rounded, up to 11 cm. long and 12 cm. broad, 3 to 5 lobed, cordate at the base, subglabrous. Flowers almost rotate, pale, flesh colored or washed with brownish copper. Fruit rather large size, purple or deep red, subacid. Ripens at the end of June and in July. Insertion of the withered flower pentagonal. We have produced this hybrid by fertilizing in 1903 *R. vulgare macrocarpum* (Red Versailles currant) with *R. warszewiczii*. It is almost intermediate between the parents, but has drawn more from the mother in the form of the flower and the anthers, more from the father in the coloration of the flower and the nonlobed receptacle. The calloused swelling of the receptacle is completely intermediate in its form and its elevation." (*E. Janczewski, Monographie des Groseilliers, p. 478.*)

40439. RIBES GLACIALE Wallich. **Currant.**

"7380."

"Shrub from 3 to 5 meters, the young shoots red or washed with red, glabrous, or dotted with short hairs. Buds oblong, red or reddish in autumn. Development and flowering very early. Habit of *R. alpinum*. Leaves rather small, length and breadth up to 6 cm. rounded or ovoid, usually 3 to 5 lobed, the posterior lobes often very small, the middle one

40406 to 40496—Continued.

noticeably predominant, sometimes strongly pointed or almost acuminate with subcordate or truncate base, sometimes even rounded, a little glossy, glabrous, dotted with glandular hairs. Leaves but little developed at flowering. Male racemes erect, 1½ to 4½ cm. long, with from 7 to 30 flowers. Flowers subturbinate, purplish maroon on the inside, glabrous. Female racemes very short, one-half to 2 cm., loose, bearing three to six flowers in wild plants, 2 to 3 cm. long in cultivation, with about ten flowers. Pedicels very short at flowering. Bracts caducous. Flowers subrotate, smaller than the males, purplish or reddish maroon, sometimes greenish. Fruit small, like a currant, round or obovate, reddish scarlet, glabrous, occasionally shortly pedunculate (one-half mm.), crowned with withered flower. Pulp flesh colored, subacid or a little sweet, not gelatinous. Seeds rather small, oblong. Matures in middle July. Native of the high mountains of southern China, Yunnan, Hupeh, Szechwan, Tibet, and in the Himalayas. Wallich confused *R. glaciale* with *R. acuminatum*, but accepting the opinion of Govan that they are specifically distinct, I propose to apply the name *R. glaciale* to the plant having the smaller leaves more like those of *R. alpinum*. Hooker fil. and Thomson do the contrary, and describe *R. acuminatum* under the name of *R. glaciale*." (*E. Janczewski, Monographie des Groseilliers, p. 467.*)

40440. Ribes trilobum Meyen.
(*Ribes gayanum* Spach.)

"7325. ♂."

"An unarmed evergreen shrub, 3 to 5 feet high; the young wood, leafstalks, flower stalks, ovary, and calyx shaggy with soft hairs. Leaves stout, greyish, very broadly or roundish ovate; 1 to 2 inches long and broad; the three lobes rounded and toothed, the base usually straight; downy on both sides. Flowers bell shaped, yellow, honey scented, closely packed in erect cylindrical racemes, 1 to 2 inches long, one-half inch diameter. Berries about the size of peas, purple-black, hairy. Native of Chile. A handsome evergreen and distinct in the shape and color of its inflorescence and the hairiness of its various parts. Some forms are less downy. Flowers in early June. It has been cultivated at Kew for many years and is quite hardy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 401–402.*)

40441. Ribes trilobum Meyen.
(*Ribes gayanum* Spach.)

"7325. ♀."

See S. P. I. No. 40440 for description.

40442 and 40443. Ribes glaciale Wallich. **Currant.**

40442. "7380 ♀."

See S. P. I. No. 40439 for previous introduction and description.

40443. "7555 K."

"Wilson No. 180. From woods, Fanghsien, western Hupeh, at an altitude of 2,250 meters. September, 1907; a form with large sepals." (*Wilson.*)

See S. P. I. No. 40439 for previous introduction and description.

40444. × Ribes gordonianum Lemaire. **Currant.**

"7362."

40406 to 40496—Continued.

"A hybrid between *R. aureum* and *R. sanguineum*, raised at Shrubland Park, near Ipswich, about 1837, by Donald Beaton, a famous gardener of his time. It is intermediate in most respects between its parents in habit, in the leaves being smaller and less hairy than those of *R. sanguineum*, and in the colour of the flowers, which are reddish outside, yellowish within, a curious blend. It is hardier than *R. sanguineum* and can be grown in parts of the New England States where that species is too tender to thrive. It is interesting and not without beauty, but is inferior to either of its parents." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 402.*)

40445. RIBES CYNOSBATI L. **Gooseberry.**

"7505."

"*Dogberry.* A native of eastern North America, introduced in 1759. Its stems are weakly armed or not at all; leaves and leafstalks downy, calyx green, bell shaped with reflexed sepals; petals white; ovary bristly, the bristles not gland tipped; style downy toward the base; fruit reddish purple, scarcely one-half inch in diameter, more or less covered with slender prickles." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 403.*)

40446. RIBES GROSSULARIOIDES Maxim. **Gooseberry.**

"7484."

"A native of China and Japan, with smooth or bristly stems armed with triple spines; leaves smooth or with glandular bristles. It differs from *R. grossularia* in the style not being downy and in the red berries being smooth. Introduced to Kew from North China by the late Dr. Bretschneider in 1881." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 403.*)

40447. RIBES HIMALAYENSE URCEOLATUM Jancz.

"7515 B."

"Wilson No. 4414. A bush 2 to 3 meters high, with black fruits from woodlands, Fanghsien, western Hupeh, altitudes, 2,300 to 2,600 meters. September, 1910." (*Wilson.*)

For a more complete description of the species, see S. P. I. No. 40448.

40448. RIBES HIMALAYENSE Decaisne.

"7515."

"Tall shrub 2 to 4 meters. Young shoots glabrous, a beautiful red in springtime (May and June). Buds, very small, lengthened. Vegetation and flowering very much later than in the currants of the gardens, contemporaneous with *R. petraeum* var. *bullatum*. Leaves rounded or ovoid, up to 12 cm. in length and breadth, lobed or more deeply cut, with lobes little developed and subobtuse, more often pointed, cordate at base, sometimes very deeply, dotted with glandular hairs above and rarely pubescent beneath. Flowers subcampanulate, or suburceolate, greenish, mottled with red or even purple on the outside, subglabrous or pubescent. Fruit rather large, red or black, insipid, oligospermous, crowned with a fleshy collarette and with the withered flower. Seeds rather large. Native of the Chinese Empire from the Himalaya Mountains and those of Yunnan at the south as far as Shensi on the north. Always in the high mountains. We know three varieties of this species, var. *decaisnei* Jancz. Leaves with acute lobes, flowers with sepals exposed from the middle of their length, ciliate

40406 to 40496—Continued.

or not. They resemble those of *R. petraeum.* Native of the Himalayas, Hupeh, and Shensi. Var. *appendiculatum* Jancz. Leaves with short subobtuse lobes. Flowers similar, not ciliate. Anthers surmounted with a point prolonging the connective. We know this only from herbarium specimens collected in the Himalayas at Phulal Daru, Nila Valley. Var. *urceolatum* Jancz. Leaves acute lobed. Flowers with swollen receptacle, with short broad sepals, more or less divergent into a funnel, always ciliate. Native of Yunnan and Sikkim. Our plant is originally from Sikkim. The flowers are purple on the outside and pubescent." (*E. Janczewski, Monographie des Groseilliers, p. 296.*)

40449. RIBES HIRTELLUM Michx. **Gooseberry.**

"7485."

"This species is very near *R. oxyacanthoides*, but has smooth shoots and stamens twice as long as the petals, which are purplish. Berry smooth, purplish or black, one-half inch across.—Curtis's Botanical Magazine, pl. 6892 (as *oxyacanthoides*). It has borne very good fruit in the Isle of Wight, where it is known as 'currant gooseberry.'" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 402.*)

40450. × RIBES HOLOSERICEUM Otto and Dietrich. **Currant.**

"7349."

"*Petraeum* var. *caucasicum* × *rubrum.* Erect shrub, 1 to 1½ meters, with robust shoots washed with red. Leaves medium size, rounded, 6½ cm. long, 7½ cm. broad, 3 lobed, more often sublobate, with lobes little developed, cordate base, subglabrous above, quite pubescent below. Flowers shortly campanulate, reddish, more often brownish, ciliate. Fertility sometimes little, sometimes great, according to the year. In some cases as many as 15 fruits in the raceme. Fruits small or medium in size, blackish purple, ordinarily compressed near the flower and in the form of a bergamot, surmounted by the withered flower with ovoid or pentagonal-rounded insertion. Pulp juicy, red, rather acid. Seeds few in number, purple. The second generation is heterogenous, composed of plants of which some resemble a little *R. vulgare*, others entirely resemble *R. rubrum*, which grew beside the mother plant and probably served to fertilize it. *R. holosericeum* (velvety currant) resembles in the richness of its racemes and the coloration of the flowers *R. petraeum*, but its receptacle, devoid of all excrescence, its straight filaments and the arch of the ovary little raised attest that *R. rubrum* entered into the crossing. The pubescence of the leaves, their cordate base, their slightly developed lobes, as well as the deep coloration of the fruits, seem to indicate that *R. petraeum* var. *caucasicum* with blackish fruits was one of its parents. In fact *R. holosericeum* is grown in some establishments under the name *R. caucasicum*." (*E. Janczewski, Monographie des Groseilliers, p. 483.*)

40451 and 40452. RIBES INEBRIANS Lindley.

40451. "7327."

"Very similar to *R. cereum*, and equally pleasing, this differs in having the bract at the base of each flower not toothed and pointed, the style smooth, and the flowers deeper in colour. Introduced from western North America in 1827." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 399–400.*)

40406 to 40496—Continued.

40452. "7327 B. Var. *minus*."

See S. P. I. No. 40451 for description.

40453. × Ribes innominatum Jancz.

"7491."

"*Divaricatum* × *grossularia*. More or less tall shrub. Shoots glabrous or pubescent; nodal spines simple or ternate, more or less vigorous, measuring up to 18 mm., setiform spines none or rare. Leaves almost small, subcoriaceous, rounded, 2½ cm. long and 3 cm. broad or larger, 3 to 5 lobed, the lobes little developed, obtuse, the base subcordate or truncate, glabrous or subpubescent. Flowers purplish maroon, bristly with stiff hairs. We have received two forms of this hybrid from the establishment of Monsieur M. Späth with the labels, *Ribes* sp. No. 3 and No. 1a. They differ from each other by their habit and above all by the pubescence. The form 'α' is a more erect shrub with both shoots and ovary glabrous and certainly derived from *R. grossularia α vulgare.* The form 'β' is on the contrary a more squatty shrub, with both shoots and ovary pubescent, and its fruits ripen later. It arises without doubt from *R. grossularia β uva crispa.* The intervention of *R. divaricatum* in the crossing is betrayed by the habit of the plant, above all by the form and coloration of the flower. Fruit of form 'α' round, larger than a currant, purple, slightly pruinose, glabrous. Taste mild, resembling that of a gooseberry. Ripens middle decade in July. That of form 'β' subglabrous, purple, ripening at the end of July." (*E. Janczewski, Monographie des Groseilliers, p. 496.*)

40454. × Ribes koehneanum Jancz. Red currant.

"7437. *Multiflorum* × *vulgare*."

"A shrub similar to other red currants in our gardens. Leaves medium sized, rounded, 6½ cm. long, 7½ cm. broad, 3 to 5 lobed, more often sublobed because the lobes are very little developed, obtuse, with cordate or subcordate base, subpubescent. Flowers small, basin shaped, brownish. Fruits very numerous, medium size, red, acid, ripening in the end of July. Insertion of the withered flower perfectly pentagonal, as in *R. vulgare. R. koehneanum* resembles *R. multiflorum* in the length and richness of racemes as well as in the length of stamen and style, and resembles *R. vulgare* in the form of the flower and the breadth of the anthers." (*E. Janczewski, Monographie des Groseilliers, p. 485.*)

40455. Ribes lacustre (Pers.) Poiret.

"7400."

"A deciduous shrub, 3 to 5 feet high, the stem thickly covered with slender prickles or stiff bristles; spines at the joints numerous, from three to nine, arranged in a semicircle. Leaves 1 to 2¼ inches long and wide, handsomely and deeply 3 or 5 lobed, the lobes often again deeply cut; stalk and chief veins more or less bristly. Flowers from 12 to 20 in glandular-downy drooping racemes, 2 to 3 inches long, funnel shaped, with short, spreading sepals brownish crimson inside, creamy white or pinkish outside. Berry round, about the size of a black currant, covered with gland-tipped bristles, black. Native of North America, on both sides of the continent, inhabiting cold, damp localities; introduced in 1812. Although the general aspect of this shrub is that of a gooseberry, especially in the shape of its leaves and in its spines, it has the long

40406 to 40496—Continued.

racemes and flowers of the currants. Its multiple spines are also distinct. Although it has no lively color to recommend it, it is pretty when its branches are strung with the graceful drooping racemes." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 403.*)

40456. Ribes montigenum McClatchie.

"7553."

"Another species, which unites as *R. lacustre* does the two sections of the genus, but has shorter, fewer flowered racemes (six to ten) and bright red fruits. Introduced from western North America in 1905." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 403.*)

40457. Ribes leptanthum A. Gray. **Gooseberry.**

"7508."

"A deciduous, spiny shrub, 3 or 4 feet high, with slightly downy, occasionally glandular-bristly young branches; spines usually slender, solitary, up to one-half inch long. Leaves roundish or somewhat kidney shaped, one-fourth to three-fourths inch wide, deeply 3 or 5 lobed, toothed, the base mostly truncate; stalk as long as the blade, downy at the base. Flowers white, tinged with pink, one to three on a short stalk; calyx cylindrical, the sepals downy, ultimately reflexed. Fruit oval, shining, blackish red, slightly downy or smooth. Native of Colorado, New Mexico, etc.; one of the prettiest and daintiest of gooseberries lately introduced, the branches being slender and densely clothed with tiny leaves." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 404.*)

40458. Ribes longeracemosum Franchet. **Currant.**

"7517."

"Mr. Wilson has recently introduced this extraordinary currant from western China, where it had originally been discovered by the Abbé David. The one character which distinguishes it from all its tribe is its remarkable racemes, from 12 to 18 inches long, pendulous, thinly set with greenish flowers and afterwards with jet-black fruits which Mr. Wilson tells me are about the size of an ordinary black currant and of good flavor. It is a deciduous unarmed shrub with smooth young shoots and 3 or 5 lobed, smooth leaves, 3 to 5½ inches long and wide; stalks up to 4½ inches long, furnished with glandular bristles most numerous toward each end. Flowers tubular, bell shaped, smooth. The species appears to be quite hardy and is worth the attention of lovers of curiosities and of fruit growers for hybridising. The fruits, however, are very thinly disposed along the stalk." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 404.*)

40459. Ribes longeracemosum davidii Jancz.

"7555 Y."

"Wilson No. 898. Woodlands, altitude 1,800 to 2,400 meters, Mupin, western Szechwan, June, 1908." (*E. H. Wilson.*)

40460. Ribes manshuricum (Maxim.) Komarow. **Red currant.**

"7544."

"Shrub 1½ to 2 meters, with young shoots glabrous or subpubescent. Bark of the wild plants almost black, with leaden reflections. Buds ovoid, not larger than those of *R. petraeum*. Leaves large, broad, resembling those of *R. latifolium*, 9 cm. long, 11 cm. broad, usually 3 lobed, more

40406 to 40496—Continued.

rarely 5 lobed, with lobes often sharp, even acuminate, subcordate or cordate base, dull, glabrous, or pubescent below. Racemes pendent, up to 16 cm. long (in Shensi), even 20 cm. (according to Franchet), without appendages in the lower third, loose or crowded, bearing as many as 50 flowers. Flowers small, basin shaped, greenish, glabrous or subpubescent. Young fruit bluish green, fruit as large as a very large currant, red, subacid under cultivation, or strongly acid (according to David). Insertion of the dry flower 5 lobed. Seeds large, rounded; matures in mid-August. Native of northern China, Shensi, eastern Mongolia, Chihli, Korea, and in all of Manchuria down to the sea. In cool elevated valleys, and in more or less humid forests, Komarow distinguished two varieties: Var. *villosa* with leaves subpubescent above, tomentose below, with larger lobes. It lives in Shensi and Mongolia. Its racemes are very long and loose; var. *subglabrum*, with glabrous leaves, or a little pubescent on the nerves. Their lobes are habitually pointed, even acuminate. Racemes short, 3 to 8 cm., crowded, containing as many as 45 flowers. We have received this from some locality in eastern Manchuria (Ussuri). It also lives in Korea. *R. manshuricum* is a twin species of *R. multiflorum*, distinguished perfectly by the form of the leaves, by the less deeply split style, and the projections of the receptacle lower and not united by a distinct ring." (*E. Janczewski, Monographie de Groseilliers, p. 274.*)

40461. RIBES MEYERI Maxim.

"7433."

"Tall shrub, more than 1 meter. Young shoots washed with red, slender, glabrous. Buds lengthened, very small, as in *R. himalayense.* Developing very late, contemporaneous with *R. petraeum.* Leaves rounded, 9 cm. long and broad, almost always 5 lobed, with lobes subacute or obtuse, sometimes little developed, with cordate base, glabrous, more rarely dotted with glandular bristles above. Flowers small, subtubular, washed with reddish purple. Fruit round, black, shiny, crowned by the withered flower contracted into a wisp. Pulp juicy, deep purple, without pronounced flavor. Matures in the end of July and August. Germination slow, after seven months, rarely after three months. Native of the mountains of Central Asia from the Pamir as far as Sungaria. We know and cultivate two distinct varieties of this species, of which probably the first was known to Maximowicz: Var. *tanguticum* Jancz., with the leaves more or less acute lobed, dotted above with glandular bristles, from Tangout; var. *turkestanicum* Jancz., with leaves more or less obtuse lobed, glabrous above, from Turkestan and Sungaria." (*E. Janczewski, Monographie des Groseilliers, p. 297.*)

40462. RIBES MEYERI TURKESTANICUM Jancz.

"7412 B."

For description of this species, see S. P. I. No. 40461.

40463. RIBES MEYERI TANGUTICUM Jancz.

"7412."

For description of this species, see S. P. I. No. 40461.

40464. RIBES MOUPINENSE LAXIFLORUM Jancz.

"7555 Z."

40406 to 40496—Continued.

"Wilson No. 4212. A bush 2 to 3 meters high, with black fruits, from Mupin, western Szechwan, altitude 2,300 to 2,800 meters. October, 1910. (*E. H. Wilson.*)

40465. Ribes moupinense Franchet. **Currant.**

"7444."

"Shrub from 1 to 2 meters or more high (according to David), 2 to 5 meters (according to Delavay). Somewhat twisted branches, with young shoots glabrous. Leaves very variable, sometimes rounded, 5 lobed, with base deeply cordate (from Tibet), sometimes trifid, with lobes very sharp and acuminate, with base truncate or subcordate (from Yunnan, Hupeh, and Kansu), length in that case up to 14 cm. and breadth up to 16 cm., glabrous, dotted with glandular bristles above and on the nerve below. Flowers turbinate, greenish, red or washed with red, glabrous, subsessile. Fruits sessile, round, rather large for a currant, black (Delavay), glabrous, shining, crowned with fleshy collarette and the withered flower. Native of the high mountains of eastern Tibet, Provinces of Muping, Yunnan, Kansu, Shensi, and Hupeh. We do not know this species except from herbarium specimens, but believe that we have distinguished two sufficiently characteristic varieties, var. *lobatum*, with rounded leaves, lobed, with short thin racemes, native of eastern Tibet; var. *tripartitum* (Batalin) with tripartite leaves and medium-sized or lengthened racemes. It is a plant more widely spread, known from Kansu, Yunnan, Hupeh, and Shensi." (*E. Janczewski, Monographie des Groseilliers, p. 299.*)

40466. Ribes multiflorum Kit. **Red currant.**

"7435."

"This is one of the red-currant group, and, as regards its flowers, the most striking; they are yellowish green, crowded on slender, cylindrical, pendulous racemes, sometimes 4 to 5 inches long. When well furnished with these the shrub is quite ornamental. For the rest it is vigorous, up to 6 feet high, and has stout unarmed branches, stouter perhaps than those of any other currants; leaves of the red-currant shape and size, gray with down beneath. Fruit roundish, red when ripe, one-third inch diameter. Native of southern and eastern Europe; introduced about 1818." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 405.*)

40467. Ribes nevadense Kellogg. **Currant.**

"7361."

A shrubby wild western American currant with thin, 3 to 5 lobed leaves, green on both sides, spreading, nodding, or ascending racemes, usually 12 to 20 flowered; small flowers with the white petals softer than the rose-colored sepals; and subglobose, blue berries.

40468 and 40469. Ribes nigrum L. **Black currant.**

40468. "7350."

"An unarmed shrub, 5 to 6 feet high, distinguished by its peculiar odour, due to small yellowish glands sprinkled freely over the lower surface of the leaf, which is conspicuously 3 lobed, deeply notched at the base, long stalked, coarsely toothed. Flowers bell shaped, dull white, in racemes, each flower from the axil of a minute bract; fruit black. Native of Europe and Siberia, possibly of Britain.

40406 to 40496—Continued.

Several varieties of this species so well known as the 'black currant' of fruit gardens have been distinguished. The varieties *dissectum* and *laciniatum* are curious and interesting, but no others are worth cultivation as ornamental shrubs." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 405.*)

40469. "7350 G. Var. *korolkowi*."

See S. P. I. No. 40468 for description.

40470. RIBES ORIENTALE Desf. Currant.

"7365."

"An unarmed deciduous shrub 5 or 6 feet high; young shoots and leafstalks covered with stiff gland-tipped sticky hairs. Leaves of the red-currant size and shape, but shining green and with bristly down on the nerves beneath; stalk one-half to 1 inch long. Flowers unisexual, the sexes on different plants, and produced on somewhat erect racemes 1 to 2 inches long; they are green suffused with red and covered with viscid hairs; berries red, downy. Native of eastern Europe and western Asia. The *R. resinosum* of Pursh, until recently regarded as a native of North America, and figured as such in Curtis's Botanical Magazine, pl. 1538, is really this species. It has little garden value, but is distinct in its unisexual flowers, very viscid glands, and erect racemes." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 406.*)

40471. RIBES OXYACANTHOIDES L. Gooseberry.

"7480."

"Is widely spread over North America. It has bristly branches, the leaves are downy, and more or less glandular, the stamens as long as the petals; the ovary, calyx, and berry smooth, the last red-purple." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 402.*)

40472 and 40473. RIBES PETRAEUM Wulf. Red currant.

40472. "7430."

"Another of the red-currant group, widely spread in a state of nature in Europe and North Africa. It has no value as an ornamental shrub, its flowers being green suffused with purple, somewhat bell shaped, in horizontal or slightly nodding racemes, 3 or 4 inches long. The leaves are more deeply lobed than in the common red currant, the lobes pointed. Fruit roundish, flattened somewhat at the end, red, very acid." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 409.*)

40473. "7430 C. Var. *rigens*." Red currant.

See S. P. I. No. 40472 for description.

40474. RIBES PETRAEUM × MULTIFLORUM. Red currant.

"7545."

For a description of this species, see S. P. I. No. 40472.

40475. RIBES TRISTE Pallas.

"7440." This was received as *R. propinquum* Turcz.

40476. × RIBES ROBUSTUM Jancz. Gooseberry.

"7520."

"A hybrid between *R. niveum* and *R. oxyacanthoides*. It is a very vigorous bush and was received at Kew in 1890 from the late Mr. Nye-

40406 to 40496—Continued.

land, gardener to the King of Denmark. Beyond that, I know nothing of its origin." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 406.*)

40477. Ribes rotundifolium Michx. **Gooseberry.**

"7500."

"A native of the eastern United States, from Massachusetts to North Carolina. Its solitary spines are small and inconspicuous; young wood and leaves downy, but not glandular or bristly; flowers greenish purple; calyx, ovary, and berry smooth. The fruit is purple and of good flavor." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol 2, p. 402.*)

40478. Ribes rubrum L. **Red currant.**

"7420."

"Found wild in Britain, is sometimes met with in gardens under the name of *R. schlechtendalii* Lange. Its racemes are horizontal or ascending, not drooping or pendent as in *vulgare*, and the flowers are urn shaped or broadly funnel shaped rather than saucer shaped. Cultivated forms of this species are grown in the gardens of Scandinavia, but in western and central Europe the cultivated red and white currants are exclusively *R. vulgare*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 409.*)

40479 and 40480. Ribes sanguineum Pursh. **Flowering currant.**

40479. "7360 B."

"A deciduous unarmed bush, 7 or 8 feet high, usually considerably more in diameter; young shoots covered with a close, fine down. Leaves 3 or 5 lobed, palmately veined, the lobes broad and rounded, unequally toothed, the base conspicuously heart shaped; 2 to 4 inches wide, less in length; smooth or nearly so above, soft with pale down beneath; stalks three-fourths to 2 inches long covered with minute down, like the young shoots, but with a few bristles near the base. Flowers deep rosy red, produced during April in drooping, finally ascending, racemes 2 to 4 inches long, 1 to 1½ inches wide; each flower one-half inch long and nearly as wide; the slender flower stalk, ovary, and tubular calyx dotted with glandular down. Currants globose, one-fourth inch diameter, glandular, black, covered with blue bloom. Native of western North America; discovered by A. Menzies in 1793 and introduced by Douglas for the Horticultural Society in 1826. This currant is the finest of Ribes and in the very front rank of all spring-flowering shrubs, being one of those that never fails to blossom well. Whilst all its forms are beautiful, some are preferable." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 407.*)

40480. "7360 J. Var. *intermedium*."

See S. P. I. No. 40479 for description.

40481. Ribes glutinosum Bentham. **Currant.**

"7360 I."

"This differs from *R. sanguineum* in the young shoots and leaves being furnished with glandular-glutinous hairs and in being less downy; also in its quite pendulous racemes. It is inferior in garden value. Native of California and Washington." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 408.*)

40406 to 40496—Continued.

40482. × RIBES SCHNEIDERI Maurer.

"7492."

"A hybrid between the black currant (male) and the gooseberry, raised in Germany." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 406.*)

40483. RIBES SPECIOSUM Pursh. **Gooseberry.**

"7460."

"A deciduous, spiny shrub, 6 to 9 feet high, the young shoots furnished with gland-tipped bristles. Leaves 3 lobed, sometimes 5 lobed, sparsely toothed, and from three-fourths to 1¼ inches long and wide, with smaller ones often obovate and tapered at the base; usually quite smooth; stalk slender, scarcely as long as the blade, with a few glandular bristles, especially at the base. Flowers rich red, usually two to five in pendulous clusters, the main stalk longer and less glandular than the minor ones. Calyx tubular, one-half inch long, glandular; sepals four, not reflexed; petals four, about as long as the sepals; stamens four, red, standing out three-fourths inch beyond the calyx. Fruit glandular bristly, red, one-half inch long, rarely seen in this country. Native of California; discovered by Menzies about 1793, and introduced from Monterey by a naval surgeon named Collie in 1828. As a flowering shrub it is the most beautiful of the gooseberries. Its branches are reddish, horizontal, or slightly dependent, and from their under side the richly coloured fuchsialike blossoms hang profusely in rows during April and May. It is very distinct in the parts of the flower, being in fours (not the usual fives) and in the very long highly coloured stamens. It is one of the earliest shrubs to break into leaf, often in early February. It shows to best advantage perhaps against a wall, where it will grow 10 or 12 feet high, but it is quite hardy in the open at Kew, where it has grown 6 or 7 feet high. It can be rooted from cuttings, but does not strike readily; layering is a more certain process." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 408.*)

40484. × RIBES SUCCIRUBRUM Zabel. **Gooseberry.**

"7507."

"*Niveum* ♀ × *divaricatum* ♂. Rather robust shrub, tall, with young shoots glabrous, armed with strong nodal spines, simple, more rarely ternate, up to 20 mm. long. Leaves rounded, up to 4 cm. long, 5 cm. wide, 3 to 5 lobed, with lobes little developed and obtuse, the base truncate or subcordate, dull, almost glabrous, similar to those of *R. niveum.* Flowers rose-carmine, pretty, resembling those of the parents in form and dimension. Fruit as large as a large currant, elliptical or rounded, black, lightly pruinose, juicy, subacid, edible, ripens in mid-July. Concerning the origin of this hybrid, perfectly intermediate between its parents, M. Zabel, of Gotha, wrote us in his letter of March 19, 1904: 'I have raised this *R. succirubrum* in 1888 from seeds of *R. niveum*, beside which grew *R. divaricatum*.' M. Zabel sent us branches and flowers of the hybrid and of its second generation which are absolutely identical. Here, then, is a new example of the constancy of hybrids between species which in no way follows the law of Mendel." (*E. Janczewski, Monographie des Groseilliers, p. 500.*)

40406 to 40496—Continued.

40485. Ribes stenocarpum Maxim. **Gooseberry.**

"7465."

"Shrub 1 to 2 meters high. Shoots vigorous, dotted or bristling with setiform spines, branches glabrous or bristly with similar spines. Nodal spines ternate, very vigorous, the middle one up to 23 mm. long in the more spiny plants; ternate or quinate and much smaller in the less spiny plants. Leaves small, 3½ cm. long, 4 cm. broad, 3 to 5 lobed or 3 to 5 cut, with lobes deeply incised, subcordate or cordate base, glabrous or pubescent, ordinarily dotted with glandular hairs. Flowers rather small, whitish or a little washed with red, glabrous or dotted with hairs, proterandrous. Fruit rather large, oblong, 20 to 25 mm. long, 8 to 10 mm. in diameter, glassy, colorless, finally washed with carmine, glabrous or dotted with glandular bristles, borne on a peduncle 4 or 5 mm. long, crowned by the withered flower contracted into a twisted wisp. The pericarp thick, acid, the seeds few in number. Ripens the end of July, but the fruit hangs till October. Native of northern China, in the mountains of Kansu and Shensi. The race with glabrous fruits was discovered in 1872 by Przewalski in Tangut, Province of Kansu; those with hispid fruits in 1894 by Father J. Giraldi in northern Shensi. The former only has been introduced into our gardens, where it succeeds very well." (*E. Janczewski, Monographie des Groseilliers, p. 374.*)

40486. Ribes aureum Pursh. **Buffalo currant.**

"7308. Var. *tenuiflorum* Jepson."

"This variety differs from *R. aureum* in having smaller flowers without fragrance and in the fruits being amber colored and translucent, with an acid flavor. It is also a taller shrub, up to 12 feet high. According to Dr. Coville, this is the true *R. aureum* of Pursh." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 399.*)

40487. Ribes triste Pallas. **Red currant.**

"7438."

"The American form of red currant, a shrub of laxer habit than *R. vulgare,* the leaves white, with down beneath when young; flowers purplish; fruit red, small, and hard. It is said to be pretty and graceful in blossom in the United States and Canada, where it inhabits cold bogs and woods from New Hampshire to Nova Scotia. It is also native of northern Asia." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 409.*)

40488. Ribes ussuriense Jancz. **Black currant.**

"7353."

"Shrub 1 meter high, much branched, producing subterranean branches (rhizomes) like *R. aureum.* Young shoots subpubescent, dotted with rather numerous yellow glands. Buds whitish. Odor of the plant resembling camphor, not at all resembling the black currant. Leaves up to 8 cm. long and broad, 3 to 5 lobed, the middle lobe very predominant, rather acute, with cordate base, glabrous, not shiny, dotted below with yellow glands. Flowers briefly campanulate, whitish or a little yellowish, pubescent, glandular. Fruit round, as large as a currant, black (greenish blue before ripening), not aromatic, surmounted by a withered flower, the insertion of which is pentagonal rounded. Flesh greenish, slightly sweet subacid, seeds small, ovoid or oblong, with a gelatinous greenish

40406 to 40496—Continued.

coating, rather thick, with funicle very inflated, gelatinous. Ripens at the end of June. Fruit falls as soon as it is ripe. Germination more rapid than in other bisexual currants, in 22 to 50 days. Native of eastern Manchuria (Ussuri) in forests. *R. ussuriense* resembles in structure of its flowers the European black currant, rather than the Asiatic, but it differs so much in its aroma, its longer bracts, the color of its flowers, the exposed sepals, and by the production of subterranean branches, that we do not hesitate to consider it as a twin species and not as a simple variety of *R. nigrum*. We have received it from three locations in eastern Manchuria, and have grown seeds from Chabarowsk. The floral buds are very sensitive to winter cold. They were all frozen in the winter in 1904–1905, and almost all in 1905–1906–1907." (*E. Janczewski, Monographie des Groseilliers, p. 349.*)

40489. Ribes valdivianum Philippi.

"7525."

"Robust shrub, 3 meters high or more, with young shoots rather thin, very pubescent, dotted with yellow glands, year-old shoots dropping their outside bark like the red currant and becoming almost green. Leaves not leathery, almost all falling in autumn and winter, ovoid-rounded, 6 cm. long, 5½ cm. broad, 3 to 5 lobed, middle lobes strongly predominant, with truncate or subcordate base, cuneiform in the small leaves, pubescent in youth, finally glabrous above, dotted with yellow glands and pubescent on the nerves beneath. Male racemes arched, almost pendent, up to 7 cm. long, rather loose, or more crowded, bearing as high as 40 flowers. Sometimes the basal flower is replaced by a secondary raceme 3 cm. long, with 15 flowers. Flowers campanulate, with the five sepal nerves prominent, yellow, the base of the tube greenish, pubescent. Female racemes unknown. Fruiting racemes up to 9 cm. long, bearing up to 25 flowers, bracts persistent, reflexed, 5 mm. long. Pedicels 4 mm., pubescent. Bractlets none. Fruit oboval, 6 mm. long, 4 mm. broad (round and black according to Gay), pubescent, glandular, crowned with withered flowers contracted into a wisp. Native of the Province of Valdivia in Chile, where the shrub is called *Pulul* or *Parilla* and the fruit *Uvilla*. Philippi has already distinguished one variety, *sessiliflorum*, which is distinguished from the type by the long racemes, 4 to 10 cm. long, bearing 30 to 60 flowers, and by the subglabrous, subsessile flowers, dotted even on the teeth of the calyx with very numerous glands. It is found in Chiloe and even, according to Philippi, in the Province of Valdivia." (*E. Janczewski, Monographie des Groseilliers, p. 445.*)

40490. Ribes velutinum × quercetorum. Gooseberry.

"7518."

"*R. velutinum* Greene is a shrub 1 to 1½ mm. high, young shoots velvety, dotted with glandular bristles. Nodal spines simple or ternate, up to 18 mm. long, sometimes pubescent at the base. Leaves small, rounded reniform, 8 to 30 mm. long, 11 to 35 mm. broad, 3 to 5 lobed, or 3 to 5 fid, deeply dentate, the base truncate, similar to those of *R. microphyllum* and *R. leptanthum*, pubescent, often glandular. Flowers small, orange yellow, or white, velvety. Fruits small, purple-black, glabrous, pubescent or dotted with pediceled glands, crowned with withered flowers, fastened into a wisp. Seeds small. Germination in January and February, after

40406 to 40496—Continued.

2, 7, even 13 months. Native of California, Nevada, and Utah, in the mountains, 1,400 to 2,800 meters. Designated by different names or considered as a variety of *R. leptanthum* by its shorter style, by its nectariferous anthers, and by the pubescence of its leaves. *R. congdoni* (*R. quercetorum* Greene) with subglabrous ovary and glabrous fruit is considered a variety. It is a plant likewise from California, from Mariposa County, according to Heller, and from Kern County." (*E. Janczewski, Monographie des Groseilliers, p. 380.*)

40491. Ribes viburnifolium A. Gray.

"7498."

"An evergreen, unarmed shrub, 7 or 8 feet high against a wall, young shoots slightly downy at first, with numerous resin glands. Leaves ovate or oval, three-fourths to 1¾ inches long, one-half to 1¼ inches wide; rounded at the base, blunt at the apex, coarsely toothed, glossy and smooth above, almost or quite devoid of down beneath, but thickly sown with resin dots which emit a very pleasant turpentinelike odour when rubbed; stalk downy, one-eighth to one-sixth inch long. Flowers one-third inch across, produced in April in erect racemes about 1 inch long, terminating short, densely leafy shoots; dull rose coloured, the sepals spreading. Berry oval, red, one-third inch long. Native of Lower California and Santa Catalina Island; introduced to Kew in 1897. A remarkably distinct species, of little beauty, but interesting for its evergreen aromatically scented leaves. It needs wall protection at Kew." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 408*).

40492. Ribes trilobum Meyen.
(*Ribes gayanum Spach.*)

"7328."

See S. P. I. No. 40440 for previous introduction and description.

40493. Ribes sp.

"7555 P. Vilmorin No. 5261."

40494. Ribes watsonianum Koehne. **Gooseberry.**

"7450."

"Shrub little branched, with stiff shoots, pubescent, bristly with glandular bristles, without setiform spines, armed only with very short nodal spines, never more than 6 mm. long, usually ternate, rarely more numerous (5 to 7) and semiverticiliate. Glands secreting a yellow oily substance, soluble in alcohol. Vegetation and flowering very late. Buds ovoid, much larger than in neighboring species. Leaves small, rounded, rather pale green, 2½ to 6 mm. long, 3½ to 6½ cm. broad, 3 to 5 lobed, very deeply cut with lobes obtuse, base subcordate or cordate, pubescent and bristling with glandular hairs. Flowers medium sized, whitish or flesh colored, bristly with stiff hairs. Fruit pale, rather large, spherical, entirely bristly with rather long delicate spines. Flesh a little viscous, rather sweetish. Ripens the end of July and August. Native of the high mountains of northern California (Trinity Mountains, 2,700 meters), and of Oregon and Washington (Mount Paddo at 2,000 meters). *R. watsonianum* never produces scattered setiform spines, even on the most vigorous shoots." (*E. Janczewski, Monographie des Groseilliers, p. 368*).

40495. Ribes divaricatum Dougl. **Gooseberry.**

"4795."

40406 to 40496—Continued.

"A native of the coast region of western North America, of vigorous growth, and up to 10 feet high. Its young wood is armed with single or triple spines up to two-thirds inch long and is sometimes bristly, usually smooth. Leaves with appressed hairs above, almost or quite smooth beneath. Calyx downy, greenish purple, petals whitish, ovary and berry smooth, the last globose, one-third inch diameter, black-purple. This species is nearly allied to *R. rotundifolium*, but is found wild on the opposite side of the continent, and is a bigger bush, well armed with long, stout spines." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 402.*)

40496. RIBES PETRAEUM Wulf. **Currant.**

"7430 B. Var. *opulifolium*."

See S. P. I. No. 40472 for description of this species.

40497. PYRUS SALICIFOLIA Pall. Malaceæ. Willow-leaved pear.

From Novospasskoe, Russia. Presented by Mr. A. D. Woeikoff, director., Jardin Expérimental de l'École Horticulture, Cholmy. Received April 7, 1915.

"A tree, 15 to 25 feet high, branchlets covered with down, which is quite white when young. Leaves 1½ to 3½ inches long, one-third to two-thirds inch wide; narrowly lanceolate, tapering gradually toward both ends, covered when young on both sides with a beautiful silvery grey down; later in the year this falls away from the upper surface, leaving it shining green; margins quite entire; stalk one-half inch long or less, sometimes scarcely noticeable. Flowers pure white, about three-fourths inch across, produced in April, closely packed in small, rounded corymbs, the calyx and flower stalk covered with white wool. Fruit of the typical pear shape, 1 to 1¼ inches long and wide. Native of southeast Europe and Asia Minor. It is much the most ornamental of all true pears. Its leaves and flowers often open simultaneously, and it then presents a very charming picture, the willowlike leaves being of a conspicuous silky white. After the flowers fade the leaves remain silvery for some weeks, gradually, however, becoming greener on the upper surface. The fruit is harsh to the palate and of no value." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 292.*)

40498 and 40499.

From Boscotrecase, near Naples, Italy. Presented by Dr. Gustav Eisen. Received April 8, 1915.

40498. PRUNUS DOMESTICA L. Amygdalaceæ. **Prune.**

"*Papagone.* I have not seen the fruit from this tree, but as the trees were growing in the garden of a friend of mine I have no doubt that his statement that the fruit was the best was true. The *Papagone* should do well in any climate similar to that of Naples." (*Eisen.*)

Cuttings.

40499. FICUS CARICA L. Moraceæ. **Fig.**

"*Troiaro.* This fig requires a much warmer climate, at least a more even climate, than that of Fresno, and I think should not be recommended to any locality north of Los Angeles. Where it does well it is a superior variety, preferable to the *White Adriatic.* It is the best table fig in Italy. Around San Francisco Bay this fig never matures. It is not affected by fall rains, like *Adriatic* and most other figs, and possesses

40498 and 40499—Continued.

advantages not found in any other fig ripening at the same time, September–October. I have not seen the fruit from this tree, but as the trees were growing in the garden of a friend of mine I have no doubt that his statement that the fruit was the very best was true." (*Eisen.*)

Cuttings.

40500 to 40505.

From Novospasskoe, Russia. Presented by Mr. A. D. Woeikoff, director, Jardin Expérimental de l'École Horticulture, Cholmy. Received April 7, 1915.

40500. PRUNUS CERASIFERA DIVARICATA (Ledeb.) Schneider. Amygdalaceæ. **Myrobalan.**

Forma *hortensis flava.* A yellow-flowered garden variety.

For previous introductions and description, see Nos. 37688 and 38157.

40501 and 40502. PRUNUS DOMESTICA L. Amygdalaceæ. **Plum.**

40501. "*Eschi.*" 40502. "*Ishopi.*"

40503. PRUNUS DOMESTICA INSITITIA (Jusl.) Schneid. Amygdalaceæ. **Bullace.**

"*Kanatsh-Tambul.*"

See S. P. I. No. 37619 for previous introduction and description.

40504. PRUNUS SIBIRICA L. Amygdalaceæ. **Siberian apricot.**

"A deciduous bush or small tree; leaves ovate, the apex long drawn out; 2 to 3½ inches long, half as wide, reddish at first, then bright green and smooth above, with axil tufts of down beneath; stalk one-half to 1 inch long. Flowers mostly solitary, white or pink. Fruit scarcely stalked, about 1 inch long, yellow, except on the sunny side, covered with a velvety skin; the flesh scanty, dry, harsh, and scarcely edible; kernel of the nut with an almondlike, bitter taste.

"Native of the mountains of southern Siberia, where, according to Pallas, the Russian botanist, some mountain sides are covered with its pink blossoms in May, when the northern sides are purple with *Rhododendron dauricum.* Although an old tree in gardens (it was cultivated at Kew 100 years ago) and still offered for sale by continental dealers, it is scarcely known in England nowadays. So far as I have seen, it has very little to recommend it for gardens, being of about the same value as the wild apricot, to which it is very closely allied. Its leaves have usually much more elongated points." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 253.*)

40505. PRUNUS SPINOSA MACROCARPA Wallroth. Amygdalaceæ. **Sloe.**

40506 to 40509.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 12, 1915. Quoted notes by Mr. Meyer, except as otherwise indicated.

40506. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

"(No. 1252. Near Pinchow, Shensi, China. January 20, 1915.) A local variety of jujube, having large and heavy fruits of elongated form; considered to be the second best jujube in China, the Paihsiangchen (Shansi) variety coming first (S. P. I. No. 38243). Color of fruits red-

40506 to 40509—Continued. (Quoted notes by Mr. F. N. Meyer.)

dish brown, meat quite solid and very sweet, size often as large as small hen's eggs. Trees of thrifty growth, assuming remarkably large dimensions for jujubes, trunks being seen 1½ feet in diameter. The trees are almost spineless when old and sucker but very little. Apparently not attacked by 'bunch disease,' although infected wild bushes were seen in close proximity. Propagated by suckers exclusively. The wood of this jujube is extensively used in the manufacture of combs and in all sorts of turnery work, this industry having its seat in and around the village of Tafutze. Chinese name *Chin tsao* and *Fei tsao*, meaning 'golden jujube' and 'fat jujube.'"

Cuttings.

40507. ULMUS PUMILA L. Ulmaceæ. **Elm.**

"(No. 1253. Peking, China. February 23, 1915.) Var. *pendula*. A weeping variety of the very drought-resistant North Chinese elm, not growing apparently to very large dimensions. Of value as a characteristic ornamental tree, especially fit for cemeteries and for parks in cold and semiarid sections. Shows up particularly well when planted on embankments alongside water expanses. Chinese name *Lung chao yü shu*, meaning 'dragon's-claw elm tree.' Obtained from the Botanical Garden at Peking."

Cuttings.

For an illustration of a weeping form of the Chinese elm (*Ulmus pumila*), see Plate II.

40508. CASTANEA MOLLISSIMA Blume. Fagaceæ. **Chestnut.**

"(No. 2179a. Sianfu, Shensi, China. January 25, 1915.) A large-fruited variety of Chinese chestnut, coming from Yatzeko, south of Sianfu, called *Qui li tzŭ*, meaning 'superior chestnut.' This variety is propagated by grafting. It seems on the whole somewhat more resistant to the bark disease (*Endothia parasitica*) than the ordinary strain of Chinese chestnut."

40509. CITRUS sp. Rutaceæ.

"(No. 2180a. Lanchowfu, Kansu, China. December 30, 1914.) A peculiar citrus fruit, of medium-large size, somewhat flattened, skin loose, wrinkled, and warty, of dark-orange color. Segments separating easily; flesh bitterish, but not disagreeably so. Said to come from Szechwan, which also means southern Shensi to ordinary people. Growing where tangerines also thrive. Chinese name *Kan tzŭ*."

40510. CYDONIA OBLONGA Miller. Malaceæ. Quince.

(*Pyrus cydonia* L.)

From Denton, Md. Presented by Mr. Samuel G. Bye, superintendent, estate of J. W. Kerr. Received April 13, 1915.

Scions of a large-fruited quince from the estate of J. W. Kerr, Denton, Md.

40511 to 40523.

From Groningen, Holland. Presented by the director, Botanic Garden. Received April 3, 1915.

40511 to 40513. CHRYSANTHEMUM spp. Asteraceæ. **Chrysanthemum.**

Introduced for the work of the Insecticide and Fungicide Board, for studies in the production of pyrethrum powder.

40511 to 40523—Continued.

40511. Chrysanthemum caucasicum Pers. **Chrysanthemum.**

A glabrous perennial chrysanthemum. Stems erect, simple or sparingly branched; leaves pinnately divided, leaflets linear-subulate; flower heads solitary, terminal; ray flowers white, disk yellow.

40512. Chrysanthemum coccineum Willd. **Chrysanthemum.**

"Glabrous perennial 1 to 2 feet high; stem usually unbranched, rarely branched at the top; leaves thin, dark green, or in dried specimens dark brown; involucral scales with a brown margin; rays white or red, in such shades as pink, carmine, rose, lilac, and crimson, and sometimes tipped yellow, but never wholly yellow." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 757.*)

40513. Chrysanthemum carinatum Schousboe.

"Glabrous annual, 2 to 3 feet high; stem much branched; leaves rather fleshy, pinnatifid; flowers in solitary heads which are nearly 2 inches across, with typically white rays and a yellow ring at the base; involucral bracts carinate (keeled). The two colors, together with the dark-purple disk, gave rise to the name *tricolor.* The typical form, introduced into England from Morocco in 1798, was pictured in Curtis's Botanical Magazine, pl. 508, 1799. By 1856 signs of doubling appeared. In 1858 shades of red in the rays appeared in a strain introduced by F. K. Burridge, of Colchester, England, and known as *C. burridgeanum* Hort. (See Curtis's Botanical Magazine, pl. 5095, which shows a ring of red on the rays, adding a fourth color to this remarkably brilliant and varied flower, and Flore des Serres, vol. 13, pl. 1313, which also shows *C. venustum* Hort., in which the rays are entirely red, except the original yellow circle at the base.) *C. annulatum* Hort. is a name for the kinds with circular bands of red, maroon, or purple. *C. dunnetti* Hort. is another seed-grower's strain. There are full double forms in yellow margined red and white margined red, the flowers 3 inches across. The commonest and gaudiest of annual chrysanthemums, distinguished by the keeled or ridged scales of involucre and the dark purple disk." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 754.*)

40514 to 40520. Iris spp. Iridaceæ. **Iris.**

Introduced for the use of the Office of Horticultural and Pomological Investigations in its landscape-gardening work.

40514 and 40515. Iris halophila Pall. **Iris.**

40514. A small-flowered iris, 8 to 12 inches high.

"The color of the flower is variable and may be either white veined with yellow, a dull yellow, or some shade of gray purple." (*W. R. Dykes, The Genus Iris, p. 62.*)

Distribution.—Native of Asia, ranging from the Caucasus, through Persia to Afghanistan and the Northwest Frontier, Province of India.

40515. (No notes.)

40516. Iris sp. **Iris.**

Received as *Iris mongolica* Fisch., for which name a place of publication has not been found.

40511 to 40523—Continued.

45017. Iris monnieri DC. **Iris.**

A tall, slender iris, the native country of which is unknown, with narrow leaves (3 feet long and 1 to 1½ inches wide). Stems (3 to 4 feet) bearing one or more lateral clusters and a terminal head of 2 to 3 lemon-yellow flowers. (Adapted from *W. R. Dykes, The Genus Iris, p. 64.*)

40518. Iris sp. **Iris.**

Received as *Iris spuria*, but seeds do not agree with other material of this species in the seed collection.

40519. Iris spuria desertorum Ker-Gawl. **Iris.**

Similar to *I. halophila*, but has lavender flowers.

"The plants grow quickly into close masses of foliage from which emerge numerous stems. The individual flowers are small, but they are produced so freely that the whole effect is ornamental. Cultivation is extremely easy, for the plants seem to succeed in any soil. Moreover, the flowers are self-fertilized and seed is produced in abundance." (*W. R. Dykes, The Genus Iris, p. 62.*)

40520. Iris squalens L. **Iris.**

A medium-sized iris from southern Europe of the general appearance of *I. germanica.*

"The falls are veined with yellow-white on a bluish ground. The standards and styles are of a dull yellow color." (*W. R. Dykes, The Genus Iris, p. 173.*)

40521 to 40523. Oenothera spp. Onagraceæ. **Evening primrose.**

40521. Oenothera biennis L. **40523.** Oenothera glauca Michx.

40522. Oenothera fruticosa L.

Introduced for the studies of Mr. H. H. Bartlett on the genus Oenothera and the mutations of the various species, as he wished to determine the plants grown at the various botanic gardens under the various names.

40524. Coccothrinax argentea (Lodd.) Sargent. Phœnicaceæ.

(*Thrinax argentea* Lodd.) **Palm.**

From Cuba. Presented by Mr. Charles T. Simpson, Littleriver, Fla. Received March 25, 1915.

"The species from which this seed was taken is entirely different from anything I have seen in cultivation in Florida or elsewhere. The netted sheaths at the base of the leaves are striking, as they have very large, strong meshes. The tree grows in open savannas and in dry open forests. This palm is quite attractive, and I saw it in cultivation at the great hotel at Camaguey. A fine Thrinax with a stem diameter up to 4 or more inches and a height of 2 feet. The dark-green leaves are silvery beneath, their bases being beautifully netted. Grows in a variety of soils, in shade or sunshine." (*Simpson.*)

40525. Allogyne cuneiformis (DC.) Lewton. Malvaceæ.

(*Fugosia cuneiformis* Benth.)

From Sharks Bay, western Australia. Presented by Mr. T. S. McNulty, Undersecretary for Agriculture and Industries, Perth, Western Australia. Received April 4, 1915.

"A rare and little-known West Australian species of Fugosia, a genus, as observed by Bentham and Hooker fil., very nearly allied on the one hand to Hibiscus, on the other to Gossypium; differing from the former chiefly in the style, from the latter in the bracteoles. The present species seems to have been discovered in Dirk Hartog's Island by Allan Cunningham, who gave it a manuscript name implying that it has a goatlike odour. Milne, during the voyage of Captain Denham in *H. M. S. Herald*, found it on the same island, and remarks that it is a seashore plant (as indeed might be expected from its very thick and fleshy leaves). A much-branching and very woody shrub, with copious oblanceolate or spatulate, rather than cuneiform, leaves, thick and fleshy, readily breaking off in a dry state. Flowers large, axillary, solitary; the peduncles clavate; the calyx leafy, downy; the petals broadly obovate, pure white, with a deep blood-coloured spot at the base. Anthers also blood coloured, beautifully arranged in whorls, as in the *Hibiscus huegelii;* and the style and stigma, erect and connivent, are the same as in *H. huegelii*, from which this seems hardly generically distinct." (*Curtis's Botanical Magazine, pl. 5413.*)

40526. Begonia socotrana Hook. f. Begoniaceæ. **Begonia.**

From Nancy, France. Presented by Messrs. V. Lemoine & Fils. Bulbs received April 14, 1915.

"It is necessary to keep the bulbs at rest during the summer, in pots, the soil not being absolutely dry; they will grow in autumn." (*Lemoine.*)

"A winter-flowering species; stems annual, stout, and succulent, forming at the base a number of closely set scales or suppressed leaves resembling bulbs; leaves dark green, orbicular, peltate, 4 to 7 inches across, center depressed, margin recurved, crenate, flowers all male except the terminal one of each branch of the cyme, in terminal few-flowered cymes, bright rose. Bulbs or semitubers were brought from the hot sandy island of Socotra by I. B. Balfour, and grown at Kew in 1880. This excellent plant requires to be grown in a light position in a stove to develop at its best. The bulbs should be shaken out of the old soil in September or October and potted up in a light soil, rich in humus, and placed in heat and moisture, and when well established should be liberally supplied with manure water. The flowers appear during the winter months, after which the plant dies down, forming a number of large resting buds or bulbs; the pots should then be placed in an intermediate temperature and be kept nearly dry until the following growing period comes round. On account of its habit of producing flowers in winter, this species has been largely used by the hybridist in the production of a race of winter-flowering begonias, of which there are many named varieties. Following are leading *socotrana* derivatives: *Gloire de Lorraine, Gloire de Sceaux, Triomphe de Lemoine, Incomparabilis.*" (*Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 473.*)

40527. Platanus orientalis L. Platanaceæ. **Oriental plane tree.**

From Lahore, India. Presented by the superintendent, Government Agri-Horticultural Gardens. Received April 9, 1915.

See S. P. I. No. 34342 for previous introduction.

40528 to 40531. Aloe spp. Liliaceæ.

From Barberton, Transvaal. Presented by Mr. George Thorncroft. Received April 9, 1915.

40528 to 40531—Continued.

40528 and 40529. ALOE spp.

40528. "Unnamed species, stem 2 feet, foliage greenish gray. I have not yet seen this in flower, but it is quite different from any other." (*Thorncroft.*)

40529. "A new species, provisionally named *Aloe sessiliflora.* Flower stems 2 feet, plant 3 feet high, flowers close, compact to stem, color pale yellow. Habitat, rocky hillsides." (*Thorncroft.*)

40530. ALOE MARLOTHII A. Berger.

"An arborescent aloe often attaining a height of 10 feet, with extremely spiny leaves and horizontally spreading orange-red flowering spikes."

40531. ALOE sp.

"Stemless leaves in rosette, annually throws a flower stem, branching 7 feet high, flowers pink. The most beautiful Aloe I know." (*Thorncroft.*)

Received as *Aloe pretorensis,* for which name a place of publication has not been found.

40532. CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ.
Chinese knife bean.

From Nanking, China. Presented by Mr. William Millward, University of Nanking. Received April 10, 1915.

"*Tao tou* (*Dao do*), Chinese knife bean."

40533. LUFFA CYLINDRICA (L.) Roemer. Cucurbitaceæ.
(*Luffa aegyptiaca* Mill.) **Loofah gourd.**

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received April 12, 1915.

"A climbing vine, not over delicate, which matures its fruit in about six months. If figuring on using for sponges, pick fruits when green, as sponge will be softer in that case." (*Mead.*)

40534. QUERCUS INSIGNIS Martens and Galleotti. Fagaceæ. **Oak.**

From Zacuapam, Huatusco, Vera Cruz, Mexico. Purchased from Dr. C. A. Purpus. Received April 13, 1915.

See S. P. I. No. 39723 for previous introduction and description.

40535. ERAGROSTIS ABYSSINICA (Jacq.) Schrad. Poaceæ. **Teff.**

From Johannesburg, Union of South Africa. Presented by Mr. J. Burtt Davy, botanist, Agricultural Supply Association. Received April 14, 1915.

"For trial as a hay grass in Florida and other parts of the Southeast. Teff continues to be a standard hay crop here, and in spite of the fact that it has now been established in South Africa for several years, prices of teff hay on the Johannesburg market have again been ruling up to £4 10s. 0d. and £5 per ton. It is remarkable how well stock do on this grass, and the way in which its use has spread without any artificial boom proves clearly that it is a first-class thing." (*Davy.*)

40536 and 40537. LATHYRUS spp. Fabaceæ.

From Ottawa, Canada. Presented by Dr. H. T. Güssow, Dominion Botanist, Central Experiment Farm. Received April 12, 1915.

40536. LATHYRUS DRUMMONDI Hort. **Everlasting pea.**

This everlasting pea is similar to *L. rotundifolius*, but it is earlier, freer of bloom, more vigorous in growth, and sets its seed pods more abundantly. The flowers are of a bright orange-carmine tint. (Adapted from *Gardeners' Chronicle, July 4, 1896, p. 20.*)

40537. LATHYRUS SYLVESTRIS L. **Everlasting pea.**

See S. P. I. Nos. 20776 and 32415 for previous introductions.

40538 to 40541. OROBANCHE spp. Orobanchaceæ.

From Cambridge, England. Presented by Dr. R. Irwin Lynch, Botanic Garden. Received April 12, 1915.

Introduced for the experiments of Mr. Orland E. White, assistant curator of plant breeding, Brooklyn Botanic Garden.

40538. OROBANCHE FLAVA Martius.

"On *Petasites albus.*"

"A genus of singular-looking parasitic plants. All the species agree in having a dingy brownish yellow stem, which is leafless throughout, but furnished with numerous pointed scales, which take the place of leaves. The upper portion of the stem bears a spike of rather large flowers, of which the calyx is of the same russet hue as the stem; the corolla is 2 lipped, of a yellowish color tinged with pink or purple-blue and veined." (*Lindley, Treasury of Botany, vol. 2, p. 824.*)

40539. OROBANCHE LUCORUM A. Braun.

"On *Berberis vulgaris.*"

40540. OROBANCHE RAMOSA L.

"On hemp, *Cannabis sativa*, annual."

40541. OROBANCHE SALVIAE Schultz.

"On *Salvia glutinosa.*"

40542 to 40548. CHRYSANTHEMUM spp. Asteraceæ.

From Nancy, France. Presented by Prof. Edmond Gain, director, Botanic Garden. Received April 14, 1915.

Introduced for the work of the Insecticide and Fungicide Board, for studies in the production of pyrethrum powder.

40542. CHRYSANTHEMUM ANETHIFOLIUM Brouss. **Marguerite.**

Perennial; rarer in cultivation than *C. frutescens*, from which it is distinguished by its glabrous hue and by the way in which the leaves are cut.

40543. CHRYSANTHEMUM BALSAMITA L. **Costmary.**

"Tall and stout perennial; leaves sweet scented, oval or oblong, obtuse, margined with blunt or sharp teeth, lower ones petioled, upper ones almost sessile, the largest leaves 5 to 11 inches long, 1½ to 2 inches wide; pappus a short crown." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 757.*)

Distribution.—An herbaceous perennial found on the slopes of the mountains in Russian and Turkish Armenia.

40542 to 40548—Continued.

40544. CHRYSANTHEMUM CORYMBOSUM L. Chrysanthemum.

"Robust perennial, 1 to 4 feet, stem branched at the apex; leaves sometimes 6 inches long, 3 inches wide, widest at the middle and tapering both ways, cut to the very midrib, the segments alternating along the midrib. Flowers borne in dense flat-topped clusters; rays white." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 755.*)

Distribution.—An herbaceous perennial found in the meadows among mountains in southern Europe, western Asia, and northern Africa.

40545. CHRYSANTHEMUM PRAEALTUM Vent.

"The Caucasian form of *C. parthenium*, distinguished by more deeply cut leaves, longer peduncled heads, and rays longer than the disk rather than equaling it." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 756.*)

40546. CHRYSANTHEMUM SEGETUM L. Corn marigold.

"Annual, 1 to 1½ feet; leaves sparse, clasping, oblong to oblanceolate, variable, the lower petioled and the upper clasping, incisions coarse or fine, deep or shallow, but usually only coarsely serrate, with few and distant teeth, the lower ones less cut; bracts of involucre broad, obtuse; rays obovate and emarginate, golden yellow." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 754.*)

Distribution.—An herbaceous perennial found in fields in northwestern Europe.

40547. CHRYSANTHEMUM SEROTINUM L.

45048. CHRYSANTHEMUM VISCOSUM Desf.

"Annual; disk orange yellow, rays sulphur yellow. Mediterranean region." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 758.*)

40549. ORYZA SATIVA L. Poaceæ. **Rice.**

From Constantinople, Turkey. Presented by Mr. G. Bie Ravndal, American Consul-General. Received April 17, 1915.

"*Broussa* rice."

See S. P. I. No. 39545 for previous introduction and description.

40550. CHAETOSPERMUM GLUTINOSUM (Blanco) Swingle. Rutaceæ. **Tabog.**

From Manila, Philippine Islands. Presented by Mr. William S. Lyon. Received April 17, 1915.

"Since reading Mr. Swingle's monograph on Citropsis, I am prompted to ask if you know whether he has successfully worked any standard varieties of the orange on *Chaetospermum glutinosum* and if any tests have yet been made in growing under arid conditions. I think, but am not quite certain, that I wrote that this species occurs on well-drained gravelly hillsides where subjected to 70 inches of rain, practically all of which falls in 5 months, 2 to 4 inches being scattered over the remaining seven months in a few inconsequential showers. Even in the few years when the rainfall in the dry season exceeds this amount, it is, at best, absolutely a negligible quantity, for the reason that the prevailing hot, dry winds and unclouded sun will remove every appreciable trace of moisture from the soil a few hours after a fall of a quarter to a half inch. On the other hand, I lost a row of about two dozen 3-year-old seedling tobug growing in undrained land which was nearly but not quite inundated during a 10-days' storm in which we had nearly 2 feet of water fall. At the same time, adjacent rows of Mexican limes and sweet oranges in variety were hardly injured. Some of the water-logged tobug which I had dug up had for their size an extraordinary root system, and in porous land I am of the opinion would penetrate to a surprising depth." (*Lyon.*)

"The tabog is a rapid-growing tree when young, and in a warm greenhouse shows vigorous root growth. This species is being tested as a stock for use in commercial citriculture. Experiments have shown that oranges, lemons, grapefruits, and kumquats grow well when budded or grafted on young tabog plants." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 728.*)

40551 and 40552.

From Bogota, Colombia. Presented by Mr. Jorge Ancizar. Received April 16, 1915.

40551. DOLICHOLUS PHASEOLOIDES (Swartz) Kuntze. Fabaceæ. (*Rhynchosia phaseoloides* DC.)

"*Pionia.* A creeping plant. The seeds, which are red and black, taken in infusion and ground to a paste are good for epilepsy." (*Ancizar.*)

A twining, suffrutescent, high-climbing legume, with three ovate or ovate-rhomboid leaflets, numerous yellow-flowered racemes (with purple striate standards), and black seeds with a scarlet-yellow ring around the hilum. (Adapted from *Grisebach, Flora of the West Indies, p. 190.*)

40552. PASSIFLORA QUADRANGULARIS L. Passifloraceæ. **Passion fruit.**

"*Badea.* It is a creeping plant and gives a great fruit, five pounds, of fine flavor." (*Ancizar.*)

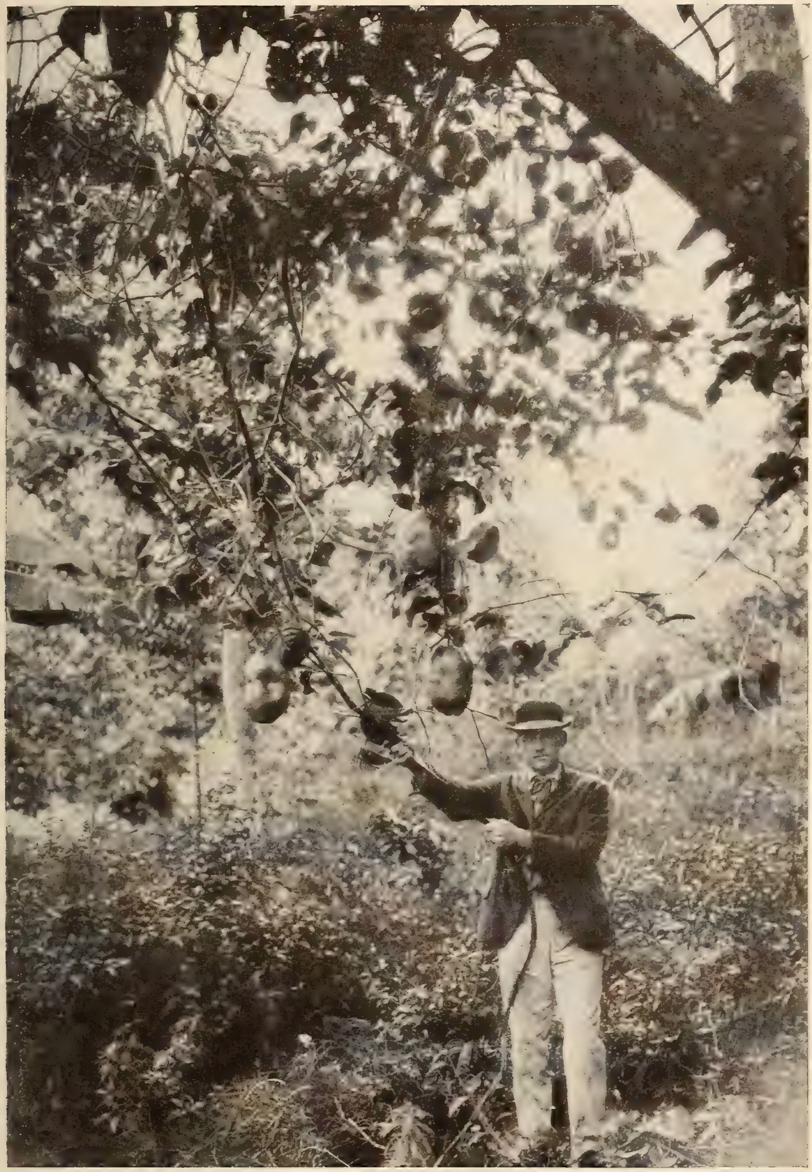
"A strong, quick-growing climber, with large oval leaves and a square stem, native of tropical America. Its large, oblong, greenish yellow fruit is not unlike a short and thick vegetable marrow, and contains in its hollow center a mass of purple, sweet-acid pulp mixed with the flat seeds. In the unripe state the succulent portion of the fruit may be boiled and used as a vegetable. The root is usually swollen and fleshy, and is sometimes eaten like a yam. The flowers are generally fertilized by insects, but these should be aided by artificial fertilization by hand, so as to ensure a larger crop of fruit. When the fruit is over, the shoots should be well cut back, retaining little but the stem. The plant is propagated by either seed or cuttings, and thrives up to about 3,000 feet in Ceylon. It should be trained over a trelliswork or fence, or allowed to climb a tree with low-spreading branches." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

For an illustration of the fruit of *Passiflora quadrangularis*, see Plate III.

40553. GARCINIA LOUREIRI Pierre. Clusiaceæ.

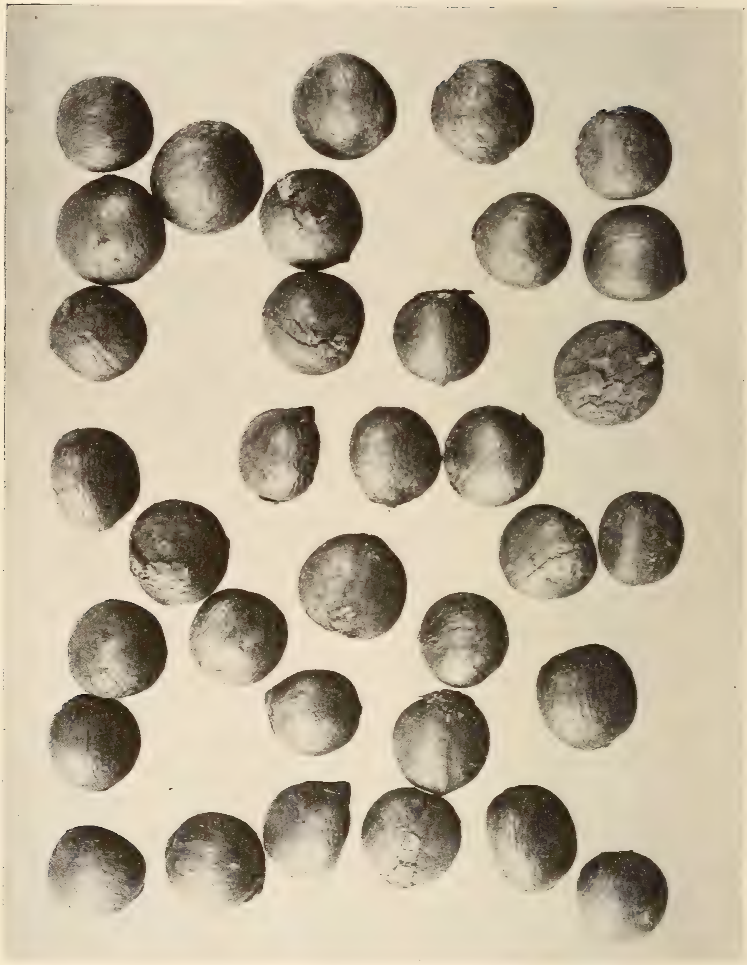
From Buitenzorg, Java. Presented by the director of the Botanic Garden. Received May 5, 1915.

Buanha. A tree 40 to 60 feet high, with opposite branches and coriaceous, nearly oblong leaves, 3 to 6 inches long. The younger branches are nearly square, but soon become cylindrical. Flowers inconspicuous. Fruit ovoid, 1½ inches long, acidulous, edible. Introduced as a possible stock for the mangosteen. Cultivated throughout the Provinces of lower Cochin China and Cambodia. (Adapted from *Pierre, Flore Forestière de la Cochin Chine.*)



THE GRANADILLA, PASSIFLORA QUADRANGULARIS L., IN HAWAII (S. P. I. NO. 40552).

One of the tropical passifloras as it appears in Hawaii. It is related to the maypop, which grows like a weed on the dry, thin soils of our Southern States, and hybrids between these two species ought to be attempted. This vine is climbing to a considerable height over a tree of the kukui (*Aleurites moluccana* Willd.) in a ravine at Robinson Station. The fruits weigh from 4 to 6 pounds each and the pulp is of delicious flavor. The thick, fleshy rind of this specimen was more or less infested with what was said to be the melon fly, a relative of the Mediterranean fruit fly. (Photographed by Mr. R. A. Young, Aug. 14, 1913; P11877FS.)



SEEDS OF THE OIL KIRI, OR KIRI OIL TREE (ALEURITES CORDATA (THUNB.) MUELL. ARG.) OF JAPAN (S. P. I. NO. 40673).

This species is quite distinct from the related tung-oil tree of central China, having much smaller seeds. The kiri oil tree is grown only in southern Japan, Formosa, and the coastal provinces of China. The seeds furnish a drying oil, similar to tung oil, which finds a similar use in the chemical industries. (Photographed by Mr. E. L. Crandall, March 26, 1909; P4589FS; natural size; S. P. I. No. 25080.)

40554 and 40555.

From Pacasmayo, Peru. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received May 11, 1915. Quoted notes by Mr. Cook.

40554. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

"No. 31. This fruit was brought on board the steamer at Pacasmayo, Peru, March 25, 1915. It is heart shaped, 10 cm. long, nearly as broad, the surface appearing to be formed of large overlapping scales, each scale with a distinct rounded tubercle near the lower end. Scales attain a length of about 2 cm. and a width of 1.5 cm., the tubercles 3 to 5 mm. broad. In texture the skin is rather tough and leathery, the surface finely wrinkled and hairy. Seeds large, 1.8 cm. long by 1.2 cm. broad, the surface wrinkled and of rather irregular shape, with prominent margins, the epidermis of the fresh seeds loosening in irregular bands, like leaf-miner burrows on leaves."

40555. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn.)

"No. 32. An avocado brought on board the steamer at Pacasmayo, Peru, March 25, 1915. It evidently belongs to the so-called West Indian type, with soft, flexible skin, but in this sort rather firm, so that it is possible to take out the flesh with a spoon. Shape distinctly pearlike, 12 cm. by 8 cm. Skin light green, about 2 mm. thick, the surface nearly smooth, shining, sprinkled with minute whitish points. Flesh rather pale, with no discolored fibers, rather soft and delicate in texture, not nearly so firm as in the Guatemalan hard-shelled type. Seed 7 cm. by 5.5 cm., with a strong hard beak above and a distinct broad hollow at the base. Seed coats fitting closely, distinctly mottled with dark and light brown when newly cleaned. Although the seed is not loose in a cavity, as in many of the West Indian avocados, it is very heavy and would probably bruise the neighboring tissues if the fruits were handled carelessly after the flesh begins to soften."

40556 to 40558. LYCOPERSICON ESCULENTUM Miller. Solanaceæ. Tomato.

From Paris, France. Purchased from Messrs. Vilmorin-Andrieux & Co. Quoted notes from their catalogue. Received April 19, 1915.

40556. "*Reine des Hâtives* (Queen of the Earlies). Smooth, exceptionally early, hardy, and resistant to disease."

40557. "*Tres hâtive de pleine terre* (open air, very early). Hardy and resistant to disease. Very highly esteemed for exportation."

40558. "*Merveille des Marchés* (Marvel of the Markets). Productive variety, very resistant to disease. Fruits of a beautiful live red, very smooth, not splitting at all."

40559. CANARIUM OVATUM Engler. Balsameaceæ. Pili nut.

From California. Presented by Mr. F. O. Popenoe, West India Gardens, Altadena, Cal. Received April 20, 1915.

"Pili nuts, bought in Los Angeles market at 12½ cents per pound." (*Popenoe.*)

40560. SWIETENIA MAHAGONI Jacq. Meliaceæ. **Mahogany.**

From Elliotts Key, Fla. Presented by Dr. John Gifford, Cocoanut Grove, Fla. Received April 19, 1915.

"Seeds from a tree on Elliotts Key. I thought it of special interest, because it is the seed of the true mahogany from a native tree of Florida. Just now the seed is scarce, but at times a wagonload of the capsules could be obtained, since the tree is quite common on the keys and lower mainland of this State. It is called *Madeira* here, and many persist in the foolish belief that it is not the true mahogany of commerce." (*Gifford.*)

See S. P. I. Nos. 10409, 34668, and 36170 for previous introductions and description.

40561 to 40600.

From Elstree, Herts, England. Presented by Mr. Vicary Gibbs, Aldenham House Gardens. Plants received April 22, 1915.

40561. (Undetermined.) Received as *Viburnum acerifolium*, but apparently it is not a Viburnum.

40562 and 40563. BERBERIS spp. Berberidaceæ. **Barberry.**

40562. BERBERIS BRACHYPODA Maxim.

"A scarlet-fruited western Chinese bush up to 2 meters in height. Inflorescence sometimes somewhat paniculate near the base. Fruits elliptic, up to 11 mm. long and 6 mm. across, with a sessile stigma." (*Sargent, Plantae Wilsonianae, vol. 1, p. 375.*)

40563. BERBERIS SUBCAULIALATA C. K. Schneider.

"This species belongs to the same group as *B. stapfiana* (S. P. I. Nos. 37975 and 40150), but it has globose fruits ripe in November, more distinctly angled branchlets, and larger leaves; the general aspect is otherwise very similar." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 249.*)

40564 and 40565. BETULA spp. Betulaceæ. **Birch.**

40564. BETULA JAPONICA MANDSHURICA (Regel) Winkler.

"Wilson No. 4088. A gray-barked tree 10 to 25 meters tall, in girth 1.5 to 2.4 meters, from Chetoshan, west of Tachienlu, western Szechwan, at altitudes of 2,800 to 3,700 meters, September, 1910." (*Sargent, Plantae Wilsonianae, vol. 2, p. 461.*)

40565. BETULA OCCIDENTALIS Hooker.

"There is a good deal of confusion in regard to this tree, and it has been called *B. occidentalis* (Sargent); *B. papyrifera* var. *lyalliana* (Koehne); and *B. papyracea* var. *occidentalis* (Dippel). The name *occidentalis* was founded by the elder Hooker in 1839 on specimens of three distinct birches. As it might with equal propriety be given to any one of them, it is better to drop it altogether. *B. lyalliana* is one of the very finest of birches and reaches sometimes 120 feet in height; bark reddish brown to whitish, peeling. Young shoots warted, downy, yellowish brown. Leaves ovate with a rounded or heart-shaped base, ordinarily 3 to 4 inches long, but on young trees often over 5 inches long; hairy along the midrib and veins beneath; veins in 7 to 10 pairs. The tree is no doubt closely allied to the paper birch, but Sargent, who regards it as specifically distinct, distinguishes it by its downy, fruiting scales, its brown

40561 to 40600—Continued.

bark, its larger size, and bigger leaves. Trees introduced in recent years are growing admirably. A native of British Columbia and Washington, inhabiting moist situations. The tree recently put into cultivation as *B. macrophylla* is either this species or a form of *B. papyrifera*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 258,* under *Betula lyalliana.*)

40566. Buxus harlandii Hance. Buxaceæ. **Box.**

"A dwarf evergreen bush of rounded compact habit, not likely, so far as one at present is able to judge, to get more than 2 or 3 feet high; shoots slender, mostly erect, slightly downy when young. Leaves standing erect, narrowly oblong or obovate, one-half to 1¼ inches long, one-eighth to three-eighths inch wide, tapering at the base, rounded at the apex, smooth. Native of China. This is one of the dwarfest of the boxes and somewhat similar to *B. sempervirens* var. *suffruticosa*, the 'Edging box,' but its leaves are longer. Its neat habit and slow growth make it useful in positions where a dwarf evergreen is needed which will not soon outgrow its space." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 277.*)

40567. Cassinia leptophylla (Forst.) R. Brown. Asteraceæ.

"An evergreen, heathlike shrub, 4 feet or more high, with erect, slender branchlets, not viscid, but clothed with a dense grayish down. Leaves one-eighth to one-sixth inch long, one-twentieth to one-sixteenth inch wide, linear, or slightly wider toward the end; smooth, dark green above, covered beneath with white or yellowish down. Flower heads white, very small and numerous, forming terminal corymbs 1 to 2 inches across. Blossoms in August and September. Native of New Zealand; very similar to *C. fulvida*, but paler beneath the leaves. The whole plant has a whiter cast. It differs also in having the disk (or receptacle) on which the florets are borne, furnished with numerous scales; nor is it quite so hardy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 304.*)

40568. Celastrus acuminatus L. f. Celastraceæ.

"An unarmed shrub or small tree from 5 to 20 feet in height with trunk 7 to 18 inches in diameter. Wood very heavy, hard, strong, very close grained and compact, suitable for turners' work and engraving. This species is easily known from a curious peculiarity of the leaves and bark, which show numerous fine, white, silky threads when broken. From Natal and Cape Colony." (*Wood, Natal Plants, pl. 267.*)

40569. Celastrus angulatus Maxim. Celastraceæ.

"A shrub 2 to 3 feet high or more, with long, trailing shoots. Leaves orbicular or elliptic, 4 to 7 inches across, deep green. Flowers inconspicuous. China." (*Kew Bulletin, 1910, p. 62.*)

40570. Clematis tangutica (Maxim.) Korsh. Ranunculaceæ.

Clematis.

"A species closely allied to, or perhaps a variety of *C. orientalis*, growing 8 or 10 feet high; stems slightly downy. Leaves grey-green, like those of *C. orientalis*, but downy when young; leaflets raggedly toothed, and sometimes 2 or 3 lobed. Flowers rich yellow, solitary, on downy stalks 3 to 6 inches long; sepals nearly 2 inches long, narrowly

40561 to 40600—Continued.

ovate, long and slenderly pointed, downy outside and at the edges. Seed vessels crowned with long, feathered styles. Native of central Asia; introduced to Kew from St. Petersburg in 1898. It is the handsomest yellow-flowered clematis in cultivation, the finest flowers being about 4 inches across. It differs from *C. orientalis* in the larger flowers and in the downy stems, flower stalks, etc. It is a superior plant." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 367.*)

40571 and 40572. COTONEASTER sp. Malaceæ.

40571. "32 Forrest. A very handsome trailing bush."

40572. "33 Forrest."

40573. CONVOLVULUS CNEORUM L. Convolvulaceæ.

"An evergreen, very leafy shrub, 2 to 3 feet high, covered with silky hairs that give the entire younger part of the plant a beautiful silvery aspect. Leaves shortly stalked, alternate, narrowly oblong or oblanceolate, 1 to 2½ inches long, one-eighth to one-half inch wide, always tapered at the base, but either pointed or rounded at the apex. Flowers in a terminal umbel, but opening successively during the summer; they are of the trumpet-mouthed type common to 'morning-glory,' being 1¼ inches long, rather more across, of flimsy texture, white tinged with pink, yellow in the tube; calyx as long as the corolla tube, silky. Native of southern Europe; cultivated in England, according to Aiton, in 1640. It is not quite hardy near London except against a wall, but thrives in the south and west. There are five strips of silky hairs traversing the corolla lengthwise outside. It needs a dry sunny spot, and can be increased very readily by cuttings during the summer and placed in gentle heat." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 380.*)

40574 to 40579. COTONEASTER spp. Malaceæ. **Cotoneaster.**

40574. COTONEASTER DAMMERI RADICANS Schneider.

This variety differs from the typical form described under S. P. I. No. 40163 in its long peduncles and constantly one or two flowered racemes. The fruit is globose and bright scarlet, and the normal habit of this plant prostrate and rooting. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 176.*)

40575. COTONEASTER DIELSIANA Pritzel.

"A deciduous shrub, 8 feet, perhaps more, high, with long, extremely slender, arching or quite pendulous branches; branchlets downy when young. Leaves one-half to 1½ inches long, three-eighths to 1 inch wide, ovate; hairy above when young, covered beneath with felt, at first white, afterwards pale brown; veins prominent. Flowers 3 to 7 in a cluster, terminating side shoots 1 inch or so long; calyx and flower stalk hairy; calyx lobes shallowly triangular. Fruit scarlet, round or rather pear shaped, one-fourth inch long.

"Native of central China; introduced for Messrs. Veitch by Wilson in 1900. It flowers in June, and the fruit is in full color in September and October; it is then one of the most effective of Cotoneasters. The habit is singularly graceful, the long whiplike shoots spreading outward and downward in every direction. The name '*applanata*' refers to the distichous arrangement of the branches of young plants, which give them the appearance of a wall-trained tree." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 408.*)

40561 to 40600—Continued.

40576. COTONEASTER DIELSIANA ELEGANS Rehder and Wilson.

This variety differs from the typical forms described under S. P. I. No. 40575 in its thinner, yet more persistent leaves, smaller pendulous brick or orange red fruit. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 166.*)

40577. COTONEASTER DIVARICATA Rehder and Wilson.

For previous introductions and description see S. P. I. Nos. 37596, 38149, and 40164.

40578. COTONEASTER SALICIFOLIA FLOCCOSA Rehder and Wilson.

"An evergreen shrub 6 to 12 feet high, the branchlets very slender, downy at first, but becoming smooth and of a dark reddish brown by the end of the season. Leaves leathery, lanceolate or narrowly ovate, wedge shaped at the base, tapering to a sharp point; three-fourths to 2½ inches long, one-fourth to three-fourths inch wide; the upper surface glossy green, wrinkled, not downy; the lower one covered at first with silky white floss, some of which falls away by the end of the year, showing the grey-white surface beneath; veins in 7 to 14 pairs; leafstalk about one-eighth inch long. Corymbs about 1 inch wide, carrying 9 to 15 flowers; stalks and calyx woolly, the teeth of the latter triangular. Fruit roundish, about one-fourth inch in diameter, bright red, containing usually three stones. Introduced by Wilson (No. 1133a) from western China in 1908, and again in 1910. A very graceful, distinct, and attractive evergreen, highly recommended by its collector for the beauty of its fruit." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 414.*)

40579. COTONEASTER SALICIFOLIA RUGOSA (Pritz.) Rehder and Wilson.

"In this variety the leaves are larger, up to 3 inches long and 1¼ inches wide, the veins numbering 6 to 12 pairs. The fruit is coral red, larger than in var. *floccosa*, and contains usually two stones. The plant is more vigorous, coarser looking, and with bigger leaves than var. *floccosa*, but in many respects similar. Introduced by Wilson (No. 335) in 1907 from western Hupeh, where he found it 9 feet high." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 414.*)

40580. DEUTZIA SCHNEIDERIANA LAXIFLORA Rehder. Hydrangeaceæ.

Shrub 2 to 2½ m. high from western Hupeh, China. Leaves oblong-lanceolate, acuminate, base rounded or broadly wedge shaped, remotely and irregularly denticulate, 2 to 3 inches long and three-fifths to 1 inch broad, with sparse hairs above and densely hairy below. Inflorescence broadly paniculate. Differs from the type chiefly in the leaves being on their under side only sparingly stellate-pubescent and therefore green, and in the looser and broader panicles. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 7–8.*)

40581. EUONYMUS RADICANS ACUTUS Rehder. Celastraceæ.

"This western Chinese variety resembles, in its climbing habit, *E. japonica radicans* Miquel [now called *E. radicans*], but is easily distinguished from this, as well as from the type, by the thinner, acute, or shortly acuminate leaves distinctly veined beneath. In typical *E. japonica* [*E. radicans*], the leaves are obtuse or obtusish, more coarsely

40561 to 40600—Continued.

and crenately serrate, and of thicker texture; the veins are not as distinct as in var. *acuta*, but more so than in var. *radicans*, where they are almost invisible." (*Sargent, Plantae Wilsonianae, vol. 1, p. 486.*)

40582. Fraxinus paxiana Lingelsheim. Oleaceæ. **Ash.**

"(Wilson No. 4423.) Tree 22 m. tall, girth 2.6 m. From woodlands, Fanghsien, Hupeh, altitude 1,800 to 2,300 m.; October, 1910." (*Sargent, Plantae Wilsonianae, vol. 2, p. 259.*)

40583. Fuchsia thymifolia H. B. K. Onagraceæ.

Received as *F. reflexa*, but later information gave the above name.

40584. Helianthemum tuberaria Mill. Cistaceæ.

"A handsome herbaceous perennial, with terminal racemes of bright-yellow flowers, 1 inch or more in diameter. Native of southern Europe and rather tender, but suffering more from too much moisture than from cold." (*Sweet's Cistineae, pl. 18.*)

40585. Lonicera henryi Hemsley. Caprifoliaceæ. **Honeysuckle.**

"An evergreen climber, with slender, very downy young shoots. Leaves oblong, with a lance-shaped apex and a rounded or heart-shaped base; 1½ to 4 inches long, three-fourths to 1½ inches wide; dark green above, paler and rather glossy beneath; downy only on the midrib and margins; stalk one-eighth to one-half inch long. Flowers purplish red, produced during June at the end of the shoot in a cluster 2 or 3 inches across; each stalk is twin flowered. Corolla 2-lipped, three-fourths inch across, the lips much reflexed, the tube about one-half inch long, hairy within, smooth outside; stamens slightly downy; style hairy, protruded one-half inch beyond the corolla; bracts awl shaped, about one-fourth inch long. Fruit blackish purple. Native of China and Tibet; introduced by Wilson in 1908, and first flowered at Nuneham in 1910. It is a free-growing climber of the same character as *L. japonica*, which is, however, very distinct in the big leaflike bracts. Botanically, it is more closely allied to *alseuosmoides* and *giraldii*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 45.*)

40586. Olearia traversii (Muell.) Hook. f. Asteraceæ.

"*Akeake.* A tree 20 to 30 feet high and sometimes 2 feet in diameter. This may be considered as the only valuable timber tree in the Chatham Islands, being durable and not subject to attacks of insects." (*Buchanan, Transactions and Proceedings of the New Zealand Institute, vol. 7, p. 337.*)

40587. Oxycoccus macrocarpus (Ait.) Pers. Vacciniaceæ. **Cranberry.**

40588. Photinia villosa (Thunb.) DC. Malaceæ.

"A deciduous shrub or small tree. Leaves obovate, or ovate-lanceolate, 1½ to 3½ inches long, three-fourths to 1½ inches wide; the apex drawn out into a long fine point, tapered at the base, finely and regularly toothed, each tooth gland tipped. Flowers white, in corymbs 1 inch long and 1½ inches wide, produced in May; stalks conspicuously warted; each flower about one-half inch in diameter. Fruit the size and shape of common haws, red. The foliage, too, is often a beautiful red in autumn. Native of Japan, China, and Corea. It is a variable plant, especially in the amount of down on the leaves, young shoots, and flower stalk. In the typical *villosa* the leaves are, as a rule, more obovate and all the younger parts of the plant hairy; the flower stalk is felted with grey down and

40561 to 40600—Continued.

the fruit is about one-third inch long." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 145.*)

40589. Piptanthus concolor Harrow. Fabaceæ.

(Wilson No. 885.) From Tatsienlu, western Szechwan, China, occurring in thickets at an elevation of 2,300 to 3,500 meters.

40590. Potentilla fruticosa L. Rosaceæ.

(Wilson No. 1213.) A common American shrub, much branched, up to 4 feet in height, with peculiar shreddy bark. The leaves are composed of three to seven leaflets, and the numerous showy bright-yellow flowers are up to 1⅓ inches in width and appear all through the summer. This shrub is also common on exposed rocky mountain slopes above 2,500 meters (8,125 feet) in western Szechwan and rarely in Hupeh, China. It is extremely variable in size of leaves and flowers and in the degree of hairiness. Wilson's No. 1213 was collected in October, 1910, at Mupin, western Szechwan, in thickets and rocky places. (Adapted from *Bailey, Standard Cyclopedia of Horticulture,* and *Sargent, Plantae Wilsonianae, vol. 2, part 2, p. 302.*)

40591. Potentilla fruticosa albicans Rehder and Wilson.

(Wilson No. 1213a.) This shrub differs from the species in the white tomentose under surface of the leaflets. The leaves are composed of five dull grayish green leaflets, and the bright-yellow flowers are about 2 cm. (four-fifths inch) wide. The foliage strongly resembles that of *P. fruticosa vilmoriniana.* Wilson No. 1213a was collected at Tatsienlu, western Szechwan, at altitudes of 3,300 to 4,000 meters (10,000 to 13,000 feet), November, 1908. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, part 2, p. 302.*)

40592. × Malus arnoldiana Rehder. Malaceæ. **Crab apple.**

"A plant which is evidently a hybrid of *M. floribunda* with one of the hybrids of *M. baccata* appeared spontaneously in the Arboretum several years ago and has been named *M. arnoldiana.* It has much larger pink flowers and larger fruit than *M. floribunda,* and in flower it is one of the most beautiful of all crab apples." (*Arnold Arboretum, Bulletin of Popular Information No. 39.*)

40593. Ribes lacustre (Pers.) Poiret. Grossulariaceæ.

For previous introduction and description, see S. P. I. No. 40455.

40594. Rubus giraldianus Focke. Rosaceæ.

"A vigorous, deciduous shrub up to 8 or 10 feet high; its biennial stems much branched toward the summit, pendulous at the end, covered with a vividly white waxy covering, not downy, armed rather sparsely with broad-based spines. Leaves pinnate, consisting of usually nine leaflets, and from 5 to 8 inches long; the main stalk downy and armed with hooked spines. Leaflets 1½ to 2½ inches long, three-fourths to 1¼ inches wide, the terminal one the largest; ovate or rather diamond shaped; lateral ones oval-lanceolate; all unequally and rather coarsely toothed, slender pointed, smooth above, white beneath, with a close felt. Inflorescence a terminal panicle; the flowers small and of little beauty, purple; fruit black.

"Native of China; first found in the Province of Shensi by Giraldi, later in Szechwan by Wilson, who introduced it in 1907. Its claims to recognition in the garden are its remarkably white stems, which are as

40561 to 40600—Continued.

striking in this respect as those of *R. biflorus*, and its pendulous branches, which give a remarkable fountainlike aspect to the shrub." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 458.*)

40595. Rubus irenaeus Focke. Rosaceæ.

"An evergreen prostrate shrub; stems round, slender, covered with a dense gray down, amidst which are set numerous small decurved prickles. Leaves roundish with a heart-shaped base and an abrupt, pointed apex; 6 inches or more across, margins toothed and bristly, sometimes obscurely lobed; upper surface smooth, dark green, lower one covered with a pale-brown felt and more or less hairy on the yellow veins; stalks 1½ to 3 inches long. Flowers white, produced singly or in pairs in the leaf axils and in a small terminal cluster. Fruit large, red.

"Native of central and western China; introduced about 1900 by Wilson for Messrs. Veitch. It is one of the most striking and remarkable of simple-leaved Rubi, the foliage being of a shape and size suggestive of a colt's-foot leaf, but having on the upper surface a curious metallic luster. Mr. Wilson informs me that it is common in woods up to 8,000 feet elevation, and will probably thrive best in partially shaded situations. It may prove of value as a handsome covering for semishaded slopes or wherever a low evergreen vegetation is desired." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 460.*)

40596. Senecio greyi Hook. f. Asteraceæ.

"Nearly allied to *S. laxifolius*. Grows well in the milder countries. This has larger, broader leaves than *S. laxifolius* and denser corymbs of flowers. From the North Island, New Zealand." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 508.*)

40597. Sorbaria arborea Schneider. Rosaceae.

"Recently introduced from China by Wilson; is very closely allied to *lindleyana*. It is apparently the most treelike of the Spiraeas and is sometimes 30 feet high. From *lindleyana* it differs chiefly in the hairs beneath the leaf being clustered (not simple), and especially in the shorter calyx tube and longer stamens." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 538,* under *Spiraea arborea.*)

40598. Veronica cataractae Forster. Scrophulariaceæ.

"This species may be taken as a type of the semiherbaceous section of the genus. The flowers are one-half inch broad and very pretty, the petals being red, spotted with dark red at the entrance to the throat. Stems prostrate at the base and ascending. Leaves very variable, oval or oblong, one-half to 6 inches long, serrate. Racemes very slender, few flowered. Generally on deep rocks, and often cultivated, particularly around Dunedin." (*Laing and Blackwell, Plants of New Zealand, pp. 383–384.*)

40599. Viburnum veitchi C. H. Wright. Caprifoliaceæ.

"A deciduous shrub about 5 feet high; young branches, leafstalks, and under surface of the leaves densely clothed with stellate down. Leaves ovate, pointed, heart shaped at the base; 3 to 5 inches long, 2 to 3 inches wide; sharply and widely toothed; upper surface with scattered stellate down. Flowers white, uniform and perfect, one-fourth inch across; produced on a stoutly stalked, very scurfy-downy cyme that is 4 or 5 inches across. Fruit red, then black. Native of central China; discovered and introduced in 1901 by Wilson for Messrs. Veitch. It is one of the

40561 to 40600—Continued.

lantana group, differing from *V. lantana* itself in the more remote marginal teeth and in the calyx being felted with starlike down. Wilson found it as a shrub about 5 feet high, but rare; he considered it to be about the most ornamental of the *lantana* group." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 659.*)

40600. VITIS FLEXUOSA PARVIFOLIA (Roxb.) Gagnepain. Vitaceæ.

"A slender-stemmed, elegant climber, shoots smooth, or downy only when quite young. Leaves roundish ovate and heart shaped at the base, or triangular and truncate at the base, often contracted at the apex to a slender point, amongst the smallest in the genus, being ordinarily 2 to 3½ inches across, of thin, firm texture; smooth and glossy above, downy on the veins and in the vein axils beneath. Inflorescence slender, 2 to 6 inches long. Fruit about the size of a pea, black. Native of Japan, Corea, and China; long cultivated in gardens, but recently brought more prominently into notice by new forms introduced from China. It is a variable species, but the typical form is known by its quite small, unlobed (or indistinctly 3-lobed) leaves, smooth and very glossy above. Var. *wilsoni* Veitch has leaves rarely more than 3 inches long, scarcely as wide, deep lustrous bronzy green above, purple beneath when young. It is one of the most dainty in appearance of all vines. Introduced from central China by Wilson for Messrs. Veitch in 1900." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 670.*)

40601 and 40602.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received April 16, 1915. Quoted notes by Mr. Regnard, except as otherwise indicated.

40601. CARICA PAPAYA L. Papayaceæ. Papaya.

"Var. *nana*. The size of the large fruits is nearly 1½ feet by 10 inches. The fruit is bright yellow when ripe, the skin is rough, and the taste sweet and flavor good. The male tree is dwarf like the female."

40602. SOLANUM MACRANTHUM Dunal. Solanaceæ.

"Ornamental tree, 40 feet high, native in Brazil."

The ample, alternate leaves, with acutely lobed margins, have prickly veins. These prickles become large and stout on the lower surface, especially on the midrib. The flowers, which occur in axillary racemes, are large and pale lilac in color, with darker dashes and pale lines. This tree has long been cultivated at the Royal Botanic Gardens, Kew. It is readily propagated from cuttings. (Adapted from *Curtis's Botanical Magazine, pl. 4138, 1845.*)

40603 to 40607.

From China. Presented by Mr. A. Sugden, Chefoo, China. Received April 20, 1915. Quoted notes by Mr. Sugden, except as otherwise indicated.

40603. BOMBAX MALABARICUM DC. Bombacaceæ.

"It may be tree cotton which has been used to pack something sent from Canton to Peking. It reminds me of the tree cotton of the South, so I have picked out the seeds and send them with a little cotton, as they appear to be ordinary style cotton seed, and we believe it to be some variety of wild cotton."

40603 to 40607. Continued. Quoted notes by Mr. A. Sugden.

40604. Brassica pekinensis (Lour.) Skeels. Brassicaceæ. **Pe-tsai.**

"Shantung cabbage. It grows in the north of China, is lettuce shaped, and weighs from 5 to 8 pounds. When boiled it is nearly as good, if not quite, as sea kale; eaten raw, in salad, it is of so delicate a flavor that I know of no vegetable in England to approach it. It is an autumn cabbage, should be planted about 18 inches apart, thrives best with moisture, and in Shantung is well watered every day; there the seed is sown in June. When nearly full grown it should be tied round so as to give it a good white heart. If it can be acclimatized in this country it will be a great addition to our vegetables." (Extract from *George Hughes's letter to the Kew Royal Gardens, April 21, 1887.*)

40605. Crataegus pinnatifida Bunge. Malaceæ. **Chinese haw.**

"*Suan cha* (*tza*). The fruit of this hawthorn is about as big as a damson and to my mind excellent as stewed fruit or as a cheese. To cook, simmer in hot water for a few minutes till soft enough to pull the skin off with the fingers; if cut off with a knife they say much of the coloring matter is lost; our cook then pokes the stones out through the top with a chopstick; they are then stewed for a few minutes with lots of sugar; the rough way of cooking is to cut in half to remove stones and not to peel. They look nicer the other way and the skin does not improve them for eating."

40606. Crataegus pinnatifida Bunge. Malaceæ. **Chinese haw.**

"*Suan cha* (*tza*). Fruits larger than those of the preceding number [S. P. I. No. 40605], which see for description."

40607. Solanum sp. Solanaceæ.

"The pods were white, but turned yellow as they ripened; there was but a bit of leaf left, which looked something like a slender cabbage leaf."

40608. Cannabis sativa L. Moraceæ. **Hemp.**

From Damascus, Syria. Presented by Mr. W. Stanley Hollis, American consul general, Beirut, Syria, who secured it from Consular Agent Young, Damascus. Received April 16, 1915.

"*Turkish hemp.* The seeds should be planted in well-irrigated or nearly marshy, rich ground and at the time of year that will favor the quickest growth, as, of course, the higher the shoots can be grown, the longer and better the fiber that will be produced." (*Young.*)

40609. Osterdamia tenuifolia (Trin.) Kuntze. Poaceæ. **Japanese lawn grass.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Plants received April 30, 1915.

"Birodoshiba."

40610 and 40611. Psidium guajava L. Myrtaceæ. **Guava.**

From New Smyrna, Fla. Presented by Mr. John Y. Detwiler. Plants received May 1, 1915. Quoted notes by Mr. Detwiler.

40610. "Pink variety. Plants over a year old, which possibly by the inarching process can be made to bear earlier than usual. The largest fruits I have seen weighed 17½ ounces; they have been known to weigh 20 ounces."

40611. "Pure white variety."

40612. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Honolulu, Hawaii. Presented by the director, Experiment Station, Hawaiian Sugar Planters' Association. Cuttings received May 1, 1915.

Demerara 1135.

40613. DAPHNE BLAGAYANA Freyer. Thymeleaceæ.

From Chester, England. Purchased from Dicksons Seed Growers, seed merchants and nurserymen. Plants received May 6, 1915.

"Native of the mountains of eastern Europe, discovered by Count Blagay in 1837; introduced about 1875. This beautiful and sweet-scented Daphne has perhaps nowhere been so successfully cultivated as in the Glasnevin Botanic Gardens. It is there planted on low mounds composed of stones and loam from a granite district. The secret of success appears to be in the continuous layering of the shoots. As soon as the young growths are an inch or so long the previous summer's branches are weighed down to the ground by placing stones on them. A little soil may come between. By this system the whole plant is always renewing its root system at the younger parts. At Glasnevin I have seen a patch 8 feet across in the rudest health. This system is, no doubt, helped by the moist, equable climate of Dublin. As this shrub is found on calcareous rock, stones of the same character would appear to be preferable for layering, but Sir F. Moore tells me he does not consider this Daphne needs lime. He recommends good loam or peat and leaf soil and partial shade." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, pp. 467–468.*)

40614. SORBUS DOMESTICA L. Malaceæ.
(*Pyrus sorbus* Gaertn.)

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Garden. Cuttings received May 6, 1915.

See S. P. I. Nos. 10349 and 27184 for previous introductions and description.

40615 and 40616.

From Yachowfu, West China. Presented by Dr. E. T. Shields, Medical Missionary of the American Baptist Foreign Mission Society. Plants received May 12, 1915.

40615. (Undetermined.) **Mountain oak.**

40616. PHOEBE NANMU (Oliver) Gamble. Lauraceæ.
(*Machilus nanmu* Hemsl.) **Lanmu, or nanmu.**

"In western Hupeh and Szechwan the name *Nanmu shu* is applied to this and other species of Phoebe and to the genera Machilus and Actinodaphne. These trees are the source of '*nanmu*,' one of the most valuable of all Chinese timbers. All the species are evergreen and singularly handsome trees. In Szechwan they are abundant up to an altitude of 1,000 meters, often forming extensive woods. They are largely planted around homesteads and temples and are a prominent feature of the scenery of parts of the Chengtu Plain and of the region round the base of Mount Omei. These trees grow to a great size and have clean straight trunks and wide, umbrageous heads. The wood is close grained, fragrant, greenish white and brown in color, easily worked, and very durable. It is highly esteemed in furniture making and for pillars and beams in the temples and in the houses of the wealthy.

40615 and 40616—Continued.

In the form of planks it is used for the bottoms of boats." (*Sargent, Plantae Wilsonianae vol. 2, p. 71.*)

See S. P. I. Nos. 30039, 37944, and 38333 for previous introductions and description.

40617 to 40619.

From Formosa. Presented by the Bureau of Productive Industry, Taihoku, Formosa. Received May 12, 1915.

40617. Asparagus lucidus Lindley. Convallariaceæ. Asparagus.

From Mount Daiton, near Taihoku. Japanese name *Tenmondo.*

"*Kusasugi-kadsura* or *Tenmondo;* a perennial herb of the order of Liliaceæ, growing wild on seacoasts and also cultivated in fields. There are standing and climbing varieties. In summer it produces small yellowish flowers, which are succeeded by little red berries. The tuberous roots grow in tufts about the size of a finger, and are preserved in sugar or used for various cooking purposes after having been boiled in water to take away the acridity." (*Useful Plants of Japan, pp. 29 and 121.*)

Plants.

40618. Cudrania javanensis Trecul. Moraceæ.

From Mount Daiton, near Taihoku, April 9, 1915.

"*Kwakwatsu gayu,* an evergreen shrub of the order Urticaceæ, of a vinelike nature, provided with thorns on the stem, and found in the Provinces of Satsuma and Osumi. The barren and fertile flowers shoot separately on distinct plants. It bears flowers in summer and reddish yellow sweet fruits in winter. They are eaten fresh or preserved in sugar. The wood is used for dyeing yellow." (*Useful Plants of Japan, No. 2136.*)

Cuttings.

40619. Malus formosana Kawakami and Koidz. Malaceæ.

"Japanese name *Taiwan-ringo.* From Arisan, March 20, 1915."

"This is a very distinct species, differing from all other [species of] Malus by the tubular constricted disk enclosing the connate base of the five styles. The large globose fruit with its impressed persistent calyx and short stalk resembles that of the common apple." (*Rehder, in Plantae Wilsonianae, vol. 2, p. 295, 1915.*)

"In November, 1905, on my exploring trip to Mount Niitaka, I chanced to discover the fruit of a very rare plant belonging to Pomaceæ at Mount Suizan, 7,000 feet high, in the southern part of the Arisan Range. As it resembled an apple in appearance, I tasted it, and found it somewhat like an apple but rather astringent, with a fine odor. Afterwards I was told that the aborigines usually eat them cooked. As the tree was 4 to 5 feet in circumference and 40 to 50 feet high, I was not able to pluck either the boughs or the leaves, and had to content myself with picking up the leaves and fruit lying about on the ground. In October of the following year I collected some of the same fruit again at Mount Arisan. At this time I found that the tree belonged to the genus of apple trees, but, being unable to obtain the flower, I could not properly specify it. In March of this year, however, Mr. Mori, of the Botanical Laboratory, succeeded in collecting the flower of this tree at a place

40617 to 40619—Continued.

7,000 feet high in Mount Gokwan, in the aboriginal district of Nanto. Some time afterwards Mr. Sasaki, my assistant, found the flower of the same tree in its later stage of bloom at Mount Bui, in the district of Ako. After having gathered all these facts together, I was at last enabled to solve this difficult problem, which had been taking my attention for a year. The plant in question is a species of wild apple tree, and is called *Sashibe* or *Sado* by the aborigines. According to Mr. Mori, '*Sashibe*' is the name given by the Bunun tribe and '*Sado*' is the one used by the Atayal tribe, living near Horisha. This plant is well known among the Formosan aborigines, so that their villages are often named after this plant. This plant is called '*Take sashibe*' in Ako district, and '*Alan sad*' at Horisha, both '*take*' and '*alan*' signifying a tribe. It is said that among the aborigines of the Paiwan tribe of Taito district their villages are often named after this plant. The Chinese inhabitants, however, name it differently; at Ako it is called '*Shaburai*' and at Rinkiho '*Soan-sha*' [*Suan cha,* sour hawthorn?] The fruit is often pickled in salt and sold by Chinese grocery dealers in towns in the vicinity of the savage district. They cost on an average about 6 sens per dozen. I bought some of the fruit myself at Ako and Rinkiho. The seed of the fruit germinating very easily, it could, in my opinion, be successfully grafted with good European apples. This is, however, a practical question requiring an experiment. In April of this year I made a scientific research into the nature of the said plant, in collaboration with Mr. G. Koidzumi, of the Science College of the Tokyo Uuniversity, which resulted in our identifying it as a new species." (*Kawakami, Tokyo Botanical Magazine, vol. 25, p. 145–146, 1911.*)

40620 to 40622. PRUNUS spp. Amygdalaceæ.

From Sapporo, Japan. Presented by the director, Botanic Garden of the College of Agriculture, Tohoku Imperial University. Received May 3, 1915.

40620. PRUNUS NIPPONICA KURILENSIS (Miyabe) Wilson.

A small freely branching tree with reddish or grayish brown bark. Young leaves densely pubescent or pilose. Mature leaves pilose to sparsely hirsute or pubescent on the veins, obovate-subrhombic to ovate-elliptic; blade 4.5 to 8 cm. long, 3 to 4.5 cm. broad, acuminate. Flowers 1 to 3 fasciculate, earlier than the leaves. Petals broadly elliptic-obovate, tinged with rose color. Japan. (Adapted from *G. Koidzumi, Jour. Coll. Sci. Imp. Univ. Tokyo, vol. 34, art. 2, p. 284.*)

40621. PRUNUS MAXIMOWICZII Rupr. **Cherry.**

See S. P. I. No. 40189 for previous introduction and description.

40622. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. (*Prunus sargentii* Rehder.) **Sargent's cherry.**

Young leaves brownish. Stipules lanceolate 3 to 6 mm. long, laciniate. Flowers rose colored, umbellate-fasciculate, large, earlier than or appearing with the leaves. Bracts obovate-oblong, 3 to 6 mm. long, 2.5 to 3 mm. broad, margin fimbriate-denticulate. (Adapted from *G. Koidzumi, Jour. Coll. Sci. Imp. Univ. of Tokyo, vol. 34, art. 2, p. 276.*)

40623 to 40626.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received April 14, 1915.

40623. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. Amygdalaceæ. (*Prunus sargentii* Rehder.) **Sargent's cherry.**

"The first of the Japanese cherries to flower is *Prunus sargentii.* This is a tall tree in the native forests of the northern island of Japan, where it is valued as a timber tree. There are six specimens of different sizes on the Forest Hill road, Arnold Arboretum, and they are now covered with clusters of large pink or rose-colored single flowers, for the color of the flowers of this tree varies considerably on different individuals. The small black fruits which ripen in June are almost hidden by the large dark-green leaves, which in the autumn turn to shades of orange and red; the smooth, shining, reddish bark adds to the beauty of this tree. Travelers who have seen cherry blossoms in many lands declare that *Prunus sargentii* should become a common tree if nurserymen will recognize its value and make a business of making it known to the public." (*Arnold Arboretum, Bulletin of Popular Information, No. 20.*)

Plants.

40624. VITIS VINIFERA L. Vitaceæ. **Peking grape.**

"The so-called Peking grape is a variety of *V. vinifera* which we received in April, 1904, from Mr. E. T. Williams, in Peking. The fruits are said to be black. At present we have no plants of it in the Arboretum." (*Rehder.*)

Rooted eyes.

40625. ROSA HUGONIS Hemsl. Rosaceæ. **Rose.**

"Grafted on the roots of *Rosa multiflora.*" (*Jackson Dawson.*)

See S. P. I. No. 40192 for description, and the Journal of Heredity, vol. 6, p. 429, September, 1915, for description and illustrations.

Grafted plants and cuttings.

40626. ROSA MULTIFLORA Thunb. Rosaceæ. **Rose.**

"These roots are good for all varieties of roses." (*Jackson Dawson.*)

40627 to 40644. CHRYSANTHEMUM spp. Asteraceæ. **Chrysanthemum.**

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received May 4, 1915.

Introduced for the work of the Insecticide and Fungicide Board, for studies in the production of pyrethrum powder.

40627. CHRYSANTHEMUM sp.

Received as *Chrysanthemum anserinaefolium* Hausskn. and Born., for which no place of publication has yet been found.

40628. CHRYSANTHEMUM BALSAMITA L.

See S. P. I. No. 40543 for previous introduction and description.

40629. CHRYSANTHEMUM BALSAMITA L.

Var. *tomentosa.*

40630. CHRYSANTHEMUM CAUCASICUM Pers.

See S. P. I. No. 40511 for previous introduction and description.

40627 to 40644—Continued.

40631. CHRYSANTHEMUM CINERARIAEFOLIUM (Trev.) Vis.

"Glaucous perennial, slender, 12 to 15 inches high; stems unbranched, with a few short, scattered hairs below the flower; leaves long-petioled, silky beneath, with distant segments; involucral scales scarious and whitish at the apex. Dalmatia. Said to be the chief source of Dalmatian insect powder. Rarely cultivated as a border plant. Common in botanic gardens." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 757.*)

40632. CHRYSANTHEMUM COCCINEUM Willd.

See S. P. I. Nos. 31103 and 40512 for previous introductions and description.

40633. CHRYSANTHEMUM CORONARIUM L.

"Annual, 3 to 4 feet; leaves bipinnately parted, somewhat clasping or eared at the base, glabrous, the segments closer together than in *C. carinatum;* involucral scales broad, scarious; rays lemon colored or nearly white. July to September. The full double forms, with rays reflexed and imbricated, are more popular than the single forms. This and *C. carinatum* are the common summer chrysanthemum. This is common in old gardens, and is also somewhat used for bedding and pot culture." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 754.*)

40634. CHRYSANTHEMUM CORYMBOSUM L.

40635. CHRYSANTHEMUM GRANDE (L.) Hook. f.

"Stout erect perennial of Algeria, 2 to 3 feet; leaves oblong to linear-oblong, often lyrate, coarsely toothed; flower heads large, solitary, rayless, golden yellow, to 2 inches across." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 758.*)

40636. CHRYSANTHEMUM sp.

Received as *Chrysanthemum haussknechtii,* the place of publication of which has not yet been found.

40637. CHRYSANTHEMUM LACUSTRE Brotero.

"Perennial; endlessly confused with *C. maximum* in gardens, and the two species are very variable and difficult to distinguish; the flowers can hardly be told apart. *C. lacustre* is a taller and more vigorous plant, and sometimes it is branched at the top, bearing three heads, while *C. maximum* is always 1-headed, and the leaves in that species are much narrower. Height, 3 to 6 feet; stem sparsely branched; leaves partly clasping, ovate-lanceolate, with coarse, hard teeth; rays about 1 inch long; pappus of the ray 2 to 3 eared. Portugal, along rivers, swamps, and lakes." (*Bailey, Standard Cyclopedia of Horticulture, vol 2, p. 757.*)

40638. CHRYSANTHEMUM LEUCANTHEMUM L. **Oxeye daisy.**

40639. CHRYSANTHEMUM MACROPHYLLUM Waldst. and Kit.

"Perennial herb, 3 feet; leaves very large, nearly sessile, pinnatisect, the lobes lanceolate and coarsely toothed; heads very many, corymbed; rays white with yellowish tinge, the disk yellow. June, July; an outdoor plant. Hungary." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 758.*)

40627 to 40644—Continued.

40640. CHRYSANTHEMUM MAXIMUM Ramond.

"This perennial species has narrower leaves than *C. lacustre*, and they are narrowed at the base; height, 1 foot; stems more angled than the above, simple or branched at the base, always 1-headed and leafless for 3 to 4 inches below the head; lower leaves petioled, wedge shaped at the base, or long oblanceolate; the upper leaves becoming few, lanceolate, but usually not very prominently pointed, the teeth not very large or striking; pappus, none; involucral scales narrower and longer, whitish transparent at the margin, while those of *C. lacustre* are broader, more rounded at the apex, and with a light-brown scarious margin. Pyrenees." (*Bailey, Standard Cyclopedia of Horticulture, vol 2, p. 757.*)

40641. CHRYSANTHEMUM MYCONIS L.

Plant erect or ascending, glabrous or pubescent, simple or strictly branched. Leaves serrate; the lower petiolate, obovate-cuneate; the upper semiclasping, obovate-oblong, oblong, or linear. Rays yellow. Mediterranean region. (Adapted from *Hálacsy, Conspectus Florae Graecae, vol. 2, p. 69, 1902.*)

40642. CHRYSANTHEMUM PALLENS Gay.

Plants erect, more or less hispid, one to few headed. Lower leaves petiolate, obovate-cuneate, crenate; the others sessile, ligulate, dentate, or the uppermost often entire. Rays white. Europe. (Adapted from *Hálacsy, Conspectus Florae Graecae, vol. 2, p. 68, 1902.*)

40643. CHRYSANTHEMUM PARTHENIUM (L.) Bernh. **Feverfew.**

"Glabrous strong-scented perennial, 1 to 3 feet, much branched in the taller forms; leaves ovate or oblong-ovate in outline, pinnatisect or bipinnatisect, smooth or lightly pubescent; segments oblong or elliptic-oblong, pinnatifid or cut, the uppermost more or less confluent; flower heads small, many stalked, corymbose; disk yellow; rays white, oblong, equaling or exceeding the disk. Europe to the Caucasus." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 756.*)

40644. CHRYSANTHEMUM PRAEALTUM Vent.

See S. P. I. No. 40545 for previous introduction and description.

40645 to 40649. HORDEUM VULGARE L. Poaceæ. **Barley.**

From Backe, Kramfors, Sweden. Presented by Mr. J. Mannerheim, director, Kramfors Joint Stock Company. Received May 8, 1915. Quoted notes by Mr. Mannerheim.

40645. "Grain introduced from Snanse, Norway, 36 years ago. Since that cultivated near the Tåsjöberg."

40646. "Grain from Backe village in Fjällsjö Parish. Whence the grain originally came, the farmers can not say. It has nevertheless now been sown for over 30 years from its own seed."

40647. "Grain cultivated at Alanäs parsonage and the seed brought from Jormvattnet, Frostvikens Parish, about 10 years ago."

40648. "This grain has grown for many years in Bergvettnets village, Dorotea Parish, on the farm of J. Gustafson. This grain sprang from a variety the name of which is not given."

40649. "The grain came from Aldernas village, Tåsjö Parish, and has grown in Risböck on the farm of Th. Tjäuden for three years."

40650 to 40669.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 19, 1915. Quoted notes by Mr. Meyer.

40650. AVENA NUDA Hoejer. Poaceæ. **Oat.**

"(No. 2184a. Paodji, near Hsiku, Kansu, China, November 6, 1914.) Hull-less oats, cultivated in the higher regions of Kansu and Tibet as a human food. The grains are parched slightly, ground into flour, which is mixed with weak tea and eaten as a porridge. Flour from nonparched oats is also much used in the making of noodles and for certain coarse cakes. These oats are apparently able to stand more drought and heat than hull-less barley, which is also much grown in the higher mountain regions of northwestern China. They are, however, apparently not as productive as the hull-less barley and the flour has not quite the rich flavor that the barley flour has. Of interest to breeders and of value for the intermountain sections of the United States."

40651. AVENA SATIVA L. Poaceæ. **Oat.**

"(No. 2185a. Titaochow, Kansu, China. December 3, 1914.) Mixed varieties of oats, grown locally at altitudes between 6,000 and 8,000 feet above the sea. Used as feed for domestic animals. Of interest to breeders; they possibly may produce varieties more resistant to drought and heat than our present strains in cultivation."

40652. HORDEUM VULGARE L. Poaceæ. **Barley.**

"(No. 2186a. Kiucheng (near Taochow), Kansu, China. November 28, 1914.) Hull-less barley, cultivated up to 11,000 feet above the sea on mountain terraces in western Kansu and Tibet. Much used as a human food and in some sections the mainstay of the people. The grains are parched, ground into flour, and this flour is eaten mixed with hot tea, butter, or grease, when obtainable, and often a bit of salt is added. Most times it is consumed in the form of a stiff dough, manipulated and eaten with the fingers, and called *Tzamba*. Another way is to pour hot water or milk on it and eat it as a gruel or porridge. The flour from nonparched grains is used in the form of noodles, often much mixed with flour from broad beans, from which it receives a coarse flavor. Of value for the more elevated regions of the United States."

40653 and 40654. ZEA MAYS L. Poaceæ. **Corn.**

40653. "(No. 2187a. Tungtung, Kansu, China. November 19, 1914.) A fine variety of white-seeded flint maize, cultivated on mountain terraces at altitudes between 4,500 and 5,000 feet above the sea. Of value possibly in extending maize culture farther north."

40654. "(No. 2188a. Yaopuko, near Chenghsien, Kansu, China. October 6, 1914.) A variety of flint maize with red grains and small ears; grown in the higher mountain regions where the nights are always cool and often very short seasons are experienced. Of value possibly in extending maize culture farther north."

40655. VICIA FABA L. Fabaceæ. **Broad bean.**

"(No. 2189a. Kiucheng (near Taochow), Kansu, China. November 28, 1914.) Broad beans are much grown in the mountains of western Kansu and Tibet at altitudes of 6,000 to 11,000 feet above the sea. They are much used as human food when ground into flour, of which noodles are

40650 to 40669—Continued. (Quoted notes by Mr. F. N. Meyer.)

made, usually with flour from wheat, barley, or oats added. The inferior qualities are used as feed for hard-working domestic animals. Chinese name *Ta tou*, meaning 'big bean.' Of value for the more elevated sections of the United States as a summer crop. As a winter crop, they thrive well in all such sections where there are no heavy frosts."

40656 to 40660. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

40656. "(No. 2190a. Yangpingkwan, Shensi, China. September 10, 1914.) A small-seeded variety of soy bean, of greenish color, grown along the edges of submerged rice fields. Of value possibly as an aftercrop for moist lands in the southern United States."

40657. "(No. 2191a. Yangpingkwan, Shensi, China. September 10, 1914.) A very small-seeded variety of soy bean, of yellow color, grown along the edges of submerged rice fields. Of value possibly as an aftercrop for moist lands in the southern United States."

40658. "(No. 2192a. Yangpingkwan, Shensi, China. September 10, 1914.) A very small-seeded variety of the soy bean, of black color. Said to be of somewhat twining habit and growing on drier lands than the preceding numbers [S. P. I. Nos. 40656 and 40657]".

40659. "(No. 2193a. Siku, Kansu, China. November 19, 1914.) Mixed green and yellow seeded varieties of soy beans of nonshattering habits. Grown on warm, dry mountain terraces under decidedly semiarid conditions. Of value possibly for the southwestern United States more specifically."

40660. "(No. 2194a. Lanchowfu, Kansu, China. December 15, 1914.) Mixed brown and yellow seeded varieties of soy beans; not grown locally, but probably coming from Shensi."

40661. PISUM ARVENSE L. Fabaceæ. **Field pea.**

"(No. 2195a. Yangpingkwan, Shensi, China. September 10, 1914.) Gray field peas, much grown as a winter crop in the milder sections of the Yangtze and Yellow River basins; also as a summer crop in the cooler mountain sections of western Kansu. They are much fed to hard-working domestic animals, preferably broken up coarsely and mixed with chopped straw of proso, bird's millet, and even kaoliang. A very palatable starch is also made from them, looking like blancmange, which is much eaten cold in summer, sprinkled over with some vinegar and chili-pepper sauce. Chinese name *Wan tou*."

40662. PISTACIA CHINENSIS Bunge. Anacardiaceæ. **Pistache.**

"(No. 2196a. Near Kuanyintang, between Paoki and Fenghsien, Shensi, China. September 15, 1914.) A beautiful and characteristic Chinese pistache tree, having graceful, pinnate foliage, which when just coming out is of wine-red color, then becomes glossy green, while toward fall it turns to flaming scarlet, purple, and yellow hues. The tree is diœcious, the males becoming larger and taller than the females, lives to be several centuries old, and can reach truly enormous sizes when very old and when located in a good situation. A tree near the village of Tsaikiapu, Shensi Province, has a girth of 16 feet at 5 feet above ground. Of value as a graceful park and avenue tree, especially for the milder semiarid sections of the United States."

40650 to 40669—Continued. (Quoted notes by Mr. F. N. Meyer.)

40663 to 40667. Holcus sorghum L. Poaceæ. **Kaoliang.**
(*Sorghum vulgare* Pers.)

40663. "(No. 2197a. Fenghsien, Shensi, China. September 5, 1914.) A small variety of kaoliang, with small heads; grown along the edges of fields as windbreaks. Generally sown in strips from 1 to 2 feet wide."

40664. "(No. 2198a. Chowchih (Djotze), Shensi, China. September 7, 1914.) A tall and erect variety of kaoliang, with compact heads and brown grains, grown in large fields."

40665. "(No. 2199a. Near Meihsien, Shensi, China. September 9, 1914.) A medium tall variety of kaoliang with dense and heavy heads and large grains of dark-amber color. Grown in patches close to the villages. Used as a human food when ground into flour, from which are made little loaves which are of coarse taste and texture. Chinese name *Ta shih kaoliang*, meaning literally 'big, full, high grass.'"

40666. "(No. 2200a. Near Hweihsien, Kansu, China. September 26, 1914.) A tall slender variety of kaoliang, with drooping heads, having large grains. Grown only for spirit manufacturing."

40667. "(No. 2201a. Near Hweihsien, Kansu, China. September 29, 1914.) A robust variety of kaoliang of tall growth, with heavy drooping heads and very large grains. Grown exclusively for spirit manufacturing."

40668. Amygdalus davidiana (Carr.) B. S. and Z. Amygdalaceæ.
(*Prunus davidiana* Franch.) **Wild peach.**

Received at the Plant Introduction Field Station, Chico, Cal., April 30, 1915.

"(No. 2182a. Peking, China. February 27, 1915.) The well-known *davidiana* peach, used as a stock for stone fruits in North China. Collected in several localities in the Chihli Province; obtained by purchase. Chinese name *Shan t'ao*, meaning 'mountain peach.'"

40669. Diospyros lotus L. Diospyraceæ. **Persimmon.**

Received at the Plant Introduction Field Station, Chico, Cal., April 30, 1915.

"(No. 2183a. Peking, China. February 25, 1915.) The *Ghoorma*, or *Ghoorma* persimmon, much used as a stock in North China to ring-bud or patch-bud kakis upon. Obtained by purchase. Chinese name *Hei tsao*, meaning 'black jujube.'"

40670. GENTIANA LUTEA L. Gentianaceæ. **Gentian.**

From Geneva, Switzerland. Presented by Mr. H. Correvon. Received May 11, 1915.

"A tall, stout, hollow-stemmed perennial herb of open or partly open grassy places on the mountains of southern and central Europe. Its large flowers are bright yellow and spotted and occur in axillary clusters. The underground portion is frequently a yard in length and may have several long branches. It is commonly collected in flower. To prevent its extermination, the Austrian Government imposed a heavy fine for collecting a root not at least 2 cm. (four-fifths of an inch) in diameter at the top, this ordinarily requiring a 3-years' growth and insuring its previous propagation by seed. The United States' supply comes chiefly from France. One of the best of the simple bitters, exciting the flow of the gastric juice, promoting the appetite, and aiding digestion." (*The National Standard Dispensatory, pp. 713–714.*)

Plants.

40671 and 40672. LATHYRUS spp. Fabaceæ.

From Nancy, France. Presented by Mr. Edmond Gain, director, Botanic Garden. Received May 1, 1915. Secured for the breeding experiments of Mr. David Burpee.

40671. LATHYRUS CIRRHOSUS Ser.

See S. P. I. No. 40311 for previous introduction and description.

40672. LATHYRUS SYLVESTRIS L. **Everlasting pea.**

See S. P. I. Nos. 32415 and 40537 for previous introductions and description.

40673. ALEURITES CORDATA (Thunb.) Muell. Arg. Euphorbiaceæ. **Kiri oil tree.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received May 12, 1915.

"The wood is used for boxes and clogs and the bark for dyeing fishing nets. From the nuts oil is pressed. This is called *kiri* oil. It is thick and poisonous; rats die soon after eating it. Umbrellas, raincoats, poles, lanterns, paper doors, etc., are coated with the oil. It is also used in printing shops, as it dries quickly. The recent advancement of chemical knowledge has discovered divers uses for it, viz, the oil can be employed directly in varnish manufacturing without previous oxidation, and after boiling with oxid of lead it dissolves in turpentine oil and produces refined varnish without adding turpentine. If paper be soaked with the oil, it makes a transparent waterproof on which any mark can be made with ink. Paint made of the *kiri* oil instead of linseed oil dries quicker; hence it is better adapted for painting ships and metal work." (Translated from the Japanese, *Timber Trees Utility, by Moroko.*)

See S. P. I. Nos. 21012 and 25080 for previous introductions and description.

For an illustration of the seeds of the kiri oil tree, see Plate IV.

40674 to 40676. CITRUS spp. Rutaceæ.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamao Experiment Station. Received May 15, 1915.

40674. CITRUS MEDICA L. **Citron.**

40675. CITRUS MEDICA NANA Wester.

"This variety might make an interesting pot plant." (*Wester.*)

"A small, thorny shrub, rarely exceeding 2 meters in height; fruit 65 or more mm. long, 55 mm. in diameter, ellipsoid to almost roundish, pointed at apex, lemon yellow, smooth; rind medium thick; pulp grayish to greenish, acid, rather dry; juice cells long and slender, almost linear; seeds many, rather small, flattened, smooth. The plant is rather common in the Archipelago and has been noted in Tarlac, Pampanga, Bulacan, Laguna, and Cebu. It is frequently grown and fruited in small pots, and is probably the smallest species in the genus. It is surprisingly productive and precocious, fruiting as early as the second year from seed, and is practically everbearing. The fruit is eaten by the Filipinos,

40674 to 40676—Continued.

but is too dry to be cultivated for the flesh, and the skin is too thin for utilization as citron peel." (*Wester, Citrus Fruits in the Philippines, Philippine Agricultural Review, first quarter, 1915.*)

40676. CITRUS MEDICA ODORATA Wester. **Tihi-tihi.**

"The leaves of this species contain 0.6 per cent essential oil, and the plant might possibly be grown for this oil." (*Wester.*)

"A small, thorny shrub, seldom exceeding 2.5 meters in height, with sharp, stout spines; fruit 60 to 65 mm. long, 7 to 10 cm. in transverse diameter, weighing 300 to 475 grams, oblate, with a shallow basal cavity, and sometimes a mammillate apex, more or less ridged longitudinally, fairly smooth, clear lemon yellow; lenticels scattered, depressed; oil cells large, equal or a trifle raised, skin rather thick; pulp grayish, rather dry, sharply acid, of lemon flavor; juice cells long and slender; seeds many, sometimes 125 in a single fruit, short, broad, and flattened. The *tihi-tihi* is a rare plant found in cultivation in Cebu and Bohol; one plant has been seen in Misamis, Mindanao. The plant is very precocious, fruiting as early as the third year from seed, everbearing, and the fruit is used by the Filipinos in washing the hair. It is not eaten and is of no commercial importance. The *tihi-tihi* differs from the citron in its green, tender, highly aromatic growth, the leaves having been found to contain 0.6 per cent essential oil, as analyzed by the Bureau of Science. The fruit is strikingly different from the citron." (*Wester, Citrus Fruits in the Philippines, Philippine Agricultural Review, first quarter, 1915.*)

40677 to 40770.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 11, 1915. Quoted notes by Mr. Meyer.

40677 to 40680. JUNIPERUS spp. Pinaceæ. **Juniper.**

40677. JUNIPERUS SALTUARIA Rehder and Wilson.

"(No. 2202a. Siku, Kansu, China. November 14, 1914.) A peculiar species of juniper, of weeping habit, forming long cordlike branches, which hang down perpendicularly from the crown. Able to stand much drought and heat, but apparently quite sensitive to severe frosts. Of value as a quaint ornamental tree for cemeteries, especially for the drier sections of the United States. Chinese name *Tzu pei shu*, meaning 'pointed conifer.'"

40678. JUNIPERUS FORMOSANA Hayata.

"(No. 2203a. Kwatsa, on Siku River, Kansu, China. November 10, 1914.) A juniper of weeping habits, very similar to the preceding number [S. P. I. 40677], but branches less drooping. Of value as a quaint ornamental tree for cemeteries, especially in the drier sections of the United States."

40679. JUNIPERUS CHINENSIS L.

"(No. 2204a. Sianfu, Shensi, China. January 25, 1915.) A tall-growing juniper of graceful habit, assuming characteristic shapes when old. Foliage bluish. Apparently not able to withstand severe frosts. Of decided value as a park tree for those semiarid sections of the United States where the winters are not too severe."

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

40680. Juniperus chinensis L.

"(No. 2205a. Djaszeyu, near Pingliang, Kansu, China. January 15, 1915.) A beautiful pyramidal variety of juniper of bluish color. Found in an old temple court. Of value as a park tree for the semiarid sections of the United States where the winters are not too cold."

40681 to 40688. Berberis spp. Berberidaceæ. **Barberry.**

40681. Berberis potanini Maxim.

"(No. 2206a. Near Siku, Kansu, China. November 16, 1914.) A barberry with very spiny, hard, glistening foliage, bearing a multitude of coral-red berries, making in some specimens the branches bend down with their weight. Height of bushes from 3 to 5 feet. Found on dry rocky places and especially on mountain slopes of decomposed rock. Of value as an ornamental garden and park shrub, especially for the mild-wintered semiarid sections of the United States. Chinese name *Huang lien tz'ŭ*, meaning 'yellow medium thorn.'"

40682. Berberis soulieana Schneider.

"(No. 2207a. Near Kwatsa, Kansu, China. November 10, 1914.) A form of the preceding number, but of more open growth and with larger berries of a carmine-red color. A very handsome shrub. Of value as an ornamental garden and park shrub, especially for the mild-wintered semiarid sections of the United States."

40683. Berberis sp.

"(No. 2208a. Near Kulentze, near Minchow, Kansu, China. November 25, 1914.) A barberry of tall growth, bearing large fruits on long racemes. Foliage large, serrated, spines over 1 inch in length. Found on mountain slopes at altitudes between 7,000 and 9,000 feet. Of value as a park shrub for the cooler parts of the United States."

40684. Berberis sp.

"(No. 2209a. Near Paodji, near Siku, Kansu, China. November 7, 1914.) A barberry growing to be over 20 feet tall, having large leaves and large spines. A rare shrub found beneath tall trees in open woods at an altitude of over 8,000 feet. Of value as a park shrub for the cooler parts of the United States."

40685. Berberis sp.

"(No. 2210a. Near Tungtung, near Tangchangpu, Kansu, China. November 19, 1914.) A tall-growing barberry found among dense scrub on rocky mountain slopes at altitudes between 6,000 and 8,000 feet. Of value as a park shrub for the cooler parts of the United States."

40686. Berberis sp.

"(No. 2211a. Yangsa, near Titaochow, Kansu, China. November 30, 1914.) A barberry of rather dense bushy growth, found on open spaces. Foliage small; berries transparent, light red color, very juicy, and of an agreeable sour taste, produced in great quantities. These berries could be utilized possibly for making tart preserves; they also could be used, when dried and ground, as a sour condiment

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

on game and on fish dishes, replacing lemon juice in all sections where the latter is not available. Of value as an ornamental shrub for bordering sidewalks and paths in parks and gardens in the cooler sections of the United States."

40687. BERBERIS sp.

"(No. 2212a. Near Kagoba, south of Siku, Kansu, China. October 31, 1914.) A barberry of very low growth, being only from 1 to 3 feet high; foliage very small, berries light carmine, juicy, produced in great masses. Found along embankments and on fields at altitudes from 6,000 to 10,000 feet; fruit ornamental. Of value, like the preceding number, as an ornamental shrub for bordering sidewalks and paths in parks and gardens in the cooler sections of the United States."

40688. BERBERIS AGGREGATA Schneider.

"(No. 2213a. Near Siku, Kansu, China. October 20, 1914.) A low-growing barberry with very small fruits and foliage. Found amidst stony débris at an altitude of 4,500 feet. Possibly a form of the preceding number [S. P. I. 40687]. Of value as an ornamental shrub for bordering sidewalks and paths in parks and gardens in the cooler sections of the United States."

40689 to 40691. LONICERA spp. Caprifoliaceæ. **Honeysuckle.**

40689. LONICERA sp.

"No. 2214a. Near Chiaochuanchen, near Chenghsien, Kansu, China. October 5, 1914.) A shrubby honeysuckle, found along mountain bases. Foliage large; berries large and dull red color; of somewhat open habit. Of use as an ornamental shrub for parks and gardens."

40690. LONICERA THIBETICA. Bur. and Franch.

"(No. 2215a. Near Taochow, Kansu, China. November 25, 1914.) A low shrubby honeysuckle of somewhat spreading growth. Cuttings sent under No. 1240 [S. P. I. No. 39915], which see for further description."

40691. LONICERA sp.

"(No. 2216a. Near Taipintze, near Taochow, Kansu, China. November 29, 1914.) A low-growing species of shrubby honeysuckle, having slender branches and small foliage, of habit similar to the preceding number [S. P. I. 40690]. Collected at an altitude of 10,000 feet. Of value as a border shrub for the cold and dry sections of the United States."

40692 to 40694. VIBURNUM spp. Caprifoliaceæ.

40692 and 40693. VIBURNUM KANSUENSE Batalin.

40692. "(No. 2217a. Near Kagoba, south of Siku, Kansu, China. October 31, 1914.) A tall Viburnum of loose, open growth; leaves of oblong form, bunches of berries large and dense. Found among scrub on stony mountain sides at altitudes between 6,000 and 9,000 feet. The red berries of this shrub are sour, very juicy, and of agreeable flavor. They can be utilized in making vinegar and refreshing drinks. Of value as an ornamental shrub for the cooler regions of the United States."

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

40693. "(No. 2218a. Near Paodji, near Siku, Kansu, China. November 9, 1914.) The same species apparently as preceding number, but the individual berries are larger and juicier. From the expressed juice we made a wine-red lemonade of very pleasing flavor, resembling in taste and looks red currant juice."

40694. VIBURNUM sp.

"(No. 2219a. Near Kagoba, south of Siku, China. November 1, 1914.) A tall-growing Viburnum, with short, round-oblong leaves, of open habit; racemes large and open, berries dark carmine red; flavor bitterish and not very juicy. Found on shady places at altitudes between 6,000 and 8,000 feet. Of value as an ornamental shrub for the cooler regions of the United States."

40695. LONICERA sp. Caprifoliaceæ. **Honeysuckle.**

"(No. 2220a. Near Sanszemiao, near Taochow, Kansu, China. December 1, 1914.) A honeysuckle of erect, bushy growth, found on open, stony places at altitudes between 7,000 and 8,000 feet. Of value as an ornamental shrub for the cooler regions of the United States."

40696 to 40698. EUONYMUS spp. Celastraceæ.

40696. "(No. 2221a. Near Kulentze, near Minchow, Kansu, China. November 24, 1914.) A shrubby spindle wood, found in dry loess banks, forming heavy trunks when not molested. Of value as an ornamental shrub for the cooler regions of the United States."

40697. "(No. 2222a. Near Kulentze, near Minchow, Kansu, China. November 24, 1914.) A low-growing spindle wood, with somewhat leathery leaves, found in dry loess banks. Of value as a rockery shrub for dry localities."

40698. EUONYMUS NANUS Bieberstein.

"(No. 2223a. Near Taochow, Kansu, China. November 25, 1914.) A spindle wood of very small, crawling growth, found on shady places amongst scrub and moss, at altitudes between 7,000 and 8,000 feet. Leaves small, lanceolate, evergreen apparently; fruit carpel large, out of which the scarlet-coated seeds hang down gracefully. Of value as a rockery plant for cool regions."

40699 to 40702. ROSA spp. Rosaceæ. **Rose.**

40699. ROSA SWEGINZOWII Koehne.

"(No. 2224a. Near Sanszemiao, near Taochow, Kansu, China. December 1, 1914.) A wild rose, resembling *Rosa hugonis;* of very vigorous growth and having remarkably broad spines, which vary much in size and in quantity on various specimens. Found on rocky mountain slopes at altitudes between 5,000 and 8,000 feet. Of value possibly as a factor in hybridization experiments."

40700 to 40702. ROSA sp.

40700. "(No. 2225a. Near Chiaochuanchen, near Chenghsien, Kansu, China. October 6, 1914.) A very vigorously growing rose of climbing habits, overrunning clumps of shrubbery. Bears very large clusters of orange-red berries; foliage large, slightly pubescent. Of value possibly as a vigorous stock and

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

as a factor in hybridization experiments. Collected at an altitude of 4,000 feet."

40701. "(No. 2226a. Near Chenyatan, near Titaochow, Kansu, China. December 2, 1914.) A bushy rose, of erect growth, averaging a height of 5 to 7 feet. Twigs of reddish color, almost spineless. Collected at an altitude of 7,000 feet. Of possible value as a factor in hybridization experiments."

40702. "(No. 2227a. Near Yaopuko, near Chenghsien, Kansu, China. October 6, 1914.) A shrubby rose, quite spiny, found on dry, stony mountain slopes. Flowers apparently yellow. Of possible value as a factor in hybridization experiments."

40703. STEPHANANDRA CHINENSIS Hance. Rosaceæ.

"(No. 2228a. Near Paodji, near Siku, Kansu, China. November 9, 1914.) A shrub of running habit, found on stony mountain slopes at altitudes between 5,000 and 7,000 feet. Leaves large; loves somewhat shaded places. Of value as a cover shrub beneath trees in large grounds."

40704. CLEMATIS sp. Ranunculaceæ. **Clematis.**

"(No. 2229a. Near Tangchang, Kansu, China. November 20, 1914.) A bushy clematis, found amidst dry, rocky débris at altitudes between 5,000 and 7,000 feet. Flowers yellow; foliage finely dissected. Of use as a border shrub of small dimensions for dry regions."

40705. JASMINUM GIRALDI Diels. Oleaceæ. **Jasmine.**

"(No. 2230a. Near Siku, Kansu, China. October 20, 1914.) A shrubby jasmine, of erect growth, 2 to 4 feet in height, found amongst rocks and stony débris. Foliage pinnate; flowers yellow, followed by showy black berries. Of value as a small ornamental shrub for gardens and parks in dry mild regions."

40706. CORIARIA SINICA Maxim. Coriariaceæ.

"(No. 2231a. Near Yaopuko, near Chenghsien, Kansu, China. October 6, 1914.) A vigorously growing shrub, of erect habit, found in great masses on open hill slopes at altitudes between 3,000 and 6,000 feet. Leaves relatively large, veined, glistening green; said to bloom profusely with whitish flowers. Berries black, very small, produced in great quantities. Of use in gardens and parks. Local name *Ma kang shu*, meaning 'horse-string tree.'"

40707. SOPHORA DAVIDII (Franch.) Komarov. Fabaceæ.

"(No. 2232a. Near Chaolienli, north of Fenghsien, Shensi, China. September 17, 1914.) A thorny shrub, growing from 3 to 5 feet in height, found on stony and waste places. Utilized here and there as a hedge plant, but of decidedly weedy tendency. Foliage grayish green, flowers whitish lilac, pods somewhat downy, produced in immense quantities. Of use as a bee plant on waste places; also suitable for hedges when kept well under control."

40708. BAUHINIA FABERI Oliver. Cæsalpiniaceæ.

"(No. 2233a. Near Madjakey, near Chiehchow, Kansu, China. October 10, 1914.) A densely growing shrub, 3 to 4 feet in height, found amidst stony débris on mountain slopes. Leaves of peculiar form, being split in on top. Of use as an ornamental and as a stone-binding shrub for gullies and river banks in dry, mild-wintered climates."

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

40709. Syringa sp. Oleaceæ. Lilac.

"(No. 2234a. Near Palitang, near Kingchow, Kansu, China. January 17, 1915.) A small lilac, growing from 3 to 5 feet in height, having small leaves and apparently very floriferous. Found covering whole loess hill slopes in company with *Amygdalus davidiana* at an altitude of 3,500 feet. Of value as a hardy flowering shrub for the dry and cool sections of the United States."

40710. Acanthopanax leucorrhizus (Oliver) Harms. Araliaceæ.

"(No. 2235a. Chishan, near Changhsien, Kansu, China. October 1, 1914.) A shrub of erect and rather open growth, found beneath trees and on clearings in woods at altitudes of 4,000 to 7,000 feet above the sea. Leaves trifoliate to quinquefoliate; in autumn loaded with multitudes of heavy bunches of black berries. Of use as a cover shrub beneath trees; also eligible for shady corners."

40711. Caragana sp. Fabaceæ.

"(No. 2236a. Near Taochow, Kansu, China. November 26, 1914.) A spiny shrub of low growth, found along dry loess ledges and in pebbly banks; locally much utilized as a hedge plant. Able to withstand low temperatures and great droughts. Of value as a hedge plant for the drier colder sections of the United States. Collected at an altitude of over 9,500 feet above the sea."

40712. Hydrangea longipes Franchet. Hydrangeaceæ.

"(No. 2237a. Near Paodji, near Siku, Kansu, China. November 7, 1914.) A shrub growing to be from 3 to 5 feet tall, found in shady places. Cuttings sent under No. 1232 [S. P. I. No. 39908]."

40713. Caryopteris incana (Thunb.) Miquel. Verbenaceæ.
(*Caryopteris mastacanthus* Schauer.)

"(No. 2238a. Near Siku, Kansu, China. November 18, 1914.) A small shrub, found amidst débris on dry hillsides and in rocky places in general. Foliage rather small, of grayish green color, blooms very late in the season, that is, from the end of September until the middle of October, with blue flowers. Is much visited by bees. All parts of the plant smell strongly of creosote; aromatic, somewhat like the sages in the western United States. This plant possesses great value as a late-flowering bee plant and deserves to be naturalized, in company with *Vitex incisa*, in rocky and dry localities, and more specifically in the foothill sections of the Rockies and the Sierra Nevada ranges in the United States. Chinese name *Shan hao tzŭ*, meaning 'mountain wormwood.'"

40714. Zanthoxylum alatum Roxb. Rutaceæ.

"(No. 2239a. Near Yuyinchen, between Liangtang and Hweihsien, Kansu, China. September 26, 1914.) A Chinese pepper tree with large-winged foliage, covered with long spines; apparently semi-evergreen. Found on sheltered shady places. Of use possibly as an ornamental garden and park shrub for the mild-wintered sections of the United States."

40715. Hippophaë rhamnoides procera Rehder. Elæagnaceæ.

"(No. 2240a. Near Paodji, near Siku, Kansu, China. November 9, 1914.) A species of sea buckthorn, reaching a height of 40 feet, with a trunk 2 feet in diameter; leaves larger than in *H. rhamnoides;* berries

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

of pale waxy color; very sour. Occurring in mountain ravines and on pebbly creek bottoms, sometimes to the exclusion of almost everything else. Of value as an ornamental park tree, suited especially for the cooler and drier sections of the United States. Collected at an altitude of 7,000 feet above the sea. Chinese name *Suan tz'ŭ*, meaning 'sour thorn.'"

40716 and 40717. Rhus spp. Anacardiaceæ. **Sumac.**

40716. Rhus javanica L.

"(No. 2241a. Near Yuyinchen, between Liangtang and Hweihsien, Kansu, China. September 25, 1914.) A sumac, found on stony mountain slopes, in ravines, and in wild places, becoming a tall shrub or small tree. Leaves large, light green, pubescent, winged. Fruits borne in large spikes; berries coated with a sticky whitish wax which burns readily. The Chinese do not seem to utilize this wax in any way. Of value as an ornamental park shrub for the mild-wintered sections of the United States."

40717. Rhus potanini Maxim.

"(No. 2242a. Mountains near Kwanyintang, between Paoki and Fenghsien, Shensi, China. September 15, 1914.) A sumac with medium-sized, glossy green leaves and reddish petioles, becoming a tall shrub or even a tree up to 60 feet high. Assumes most brilliant colors in fall. Produces many spikes of reddish bronze-colored berries, which persist on the trees for a long time. On this sumac a gall insect makes its home, producing large inflated galls, which the Chinese utilize much for dyeing black. The foreigners, however, found that they contain a great percentage of tannin, vast quantities being exported from Hankow, especially under the name of Chinese gallnuts. This sumac possibly might be cultivated on cheap lands in the Southern States for its gall production. It is not very particular as to soil requirements, but it loves good drainage. Care should be taken, however, to keep it well under control, as it has decidedly weedy tendencies. Chinese name, *Wu pei tzŭ shu*, meaning 'five-folded seed tree.'"

40718. Hovenia dulcis Thunb. Rhamnaceæ.

"(No. 2243a. Siku, Kansu, China. November 12, 1914.) A tree growing to be 40 to 60 feet high, cultivated in gardens for its peculiar looking swollen fruit stalks, which are very sweet and much beloved by the Chinese as a delicacy. They are believed to undo the effects of having had too much wine at a dinner or a feast. This tree is not particularly ornamental, with its elmlike leaves and its rather open growth. It might be cultivated, however, on a small scale in the Southern States, so as to supply the large Chinese colonies in America with one of their favorite sweetmeats. These fruit pedicels can be eaten fresh or dried; in the latter way they can be shipped over long distances. Chinese name *Kua tsao*, meaning 'warming jujube.'"

40719. Evodia rutaecarpa (Juss.) Hook. f. and Thoms. Rutaceæ.

"(No. 2244a. Near Chaolienli, near Fenghsien, Shensi, China. September 17, 1914.) A medium-sized tree, with handsome pinnated leaves, bearing large umbels of whitish flowers, followed by big bunches of fruits, which, at first green, later on turn to a dark-red color. Found in some-

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

what stony places. Of value as an ornamental garden and park tree for the mild-wintered sections of the United States. Chinese name *Shan la tzŭ shu*, meaning 'mountain pepper tree.'"

40720. Tilia sp. Tiliaceæ. **Linden.**

"(No. 2245a. Near Paodji, near Siku, Kansu, China. November 7, 1914.) A linden of medium-tall growth, having large leaves, found on moist mountain slopes at altitudes between 7,000 and 9,000 feet above the sea. Of value as an ornamental park tree for the cooler sections of the United States."

40721. Amygdalus persica L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"(No. 2246a. Shensi and Honan, China. January and February, 1915.) Cultivated peaches, collected along the roadsides. To be sown to obtain new types, possibly."

40722. Amygdalus davidiana (Carr.) B. S. and Z. Amygdalaceæ.
(*Prunus davidiana* Franch.) **Wild peach.**

"(No. 2247a. Near Chaotien, near Lungteh, Kansu, China. January 14, 1915.) The well-known *davidiana* peach, found on a rocky hill slope at an altitude of 6,000 feet above the sea. This is possibly the most western locality in China of this interesting wild peach. Local name *Mao t'ao*, meaning 'hairy peach.'"

40723. Chaenomeles lagenaria cathayensis (Hemsl.) Rehder. Malaceæ.
(*Cydonia cathayensis* Hemsl.) **Quince.**

"(No. 2248a. Chiehchow, Kansu, China. October 14, 1914.) A variety of Chinese quince, being different from the ordinary sorts in that the fruits are round, of greenish color, and scented differently. Of use for those sections of the United States where winter temperatures do not go very low."

40724 to 40728. Pyrus spp. Malaceæ. **Pear.**

40724. Pyrus sp.

"(No. 2249a. Near Liangtang, Kansu, China. September 24, 1914.) A wild pear of shrubby growth; also seen occasionally as a small tree. Fruits small, globose, of greenish color; calyx persistent; peduncles long; meat becoming soft and pulpy. Local name *Mei li*, meaning 'plum pear.'"

40725. Pyrus serrulata Rehder.

"(No. 2250a. Near Liangtang, Kansu, China. September 24, 1914.) A wild pear, growing into a small tree; leaves large, of open growth; fruits small, of brown color; calyx deciduius; peduncles short. Found on open, stony mountain sides at altitudes of 4,000 feet above the sea."

40726. Pyrus sp.

"(No. 2251a. Lanchowfu, Kansu, China. December 14, 1914.) A small pear, of russet-brown color; peduncles very long; calyx deciduous; meat soft and mealy. Sold on the streets of Lanchowfu."

40727. Pyrus sp.

"(No. 2252a. Minchow, Kansu, China. November 23, 1914.) A sour pear of round shape; calyx persistent; peduncles short; flesh

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

melting. Of poor keeping quality. Probably derived from a local wild species."

40728. PYRUS CHINENSIS Lindl.

"(No. 2253a. Pingliang, Kansu, China. January 16, 1915.) Local large pears of several varieties, all of hard flesh. To be sown to obtain new types, possibly."

40729. MALUS sp. Malaceæ. **Crab apple.**

"(No. 2254a. Sianfu, Shensi, China. August 30, 1914.) Crab apples of various sizes, purchased on the streets of Sianfu. To be tested in comparatively dry regions."

40730. COTONEASTER sp. Malaceæ.

"(No. 2255a. Near Kagoba, south of Siku, Kansu, China. November 1, 1914.) A tall-growing vigorous species of Cotoneaster with rather large leaves and large dark-violet berries. Found on rocky cliffs and ledges. Of value as an ornamental shrub for parks and gardens. Collected at an altitude of 6,000 feet above the sea."

40731. ALBIZZIA sp. Mimosaceæ.

"(No. 2256a. Near Yaopuko, near Chenghsien, Kansu, China. October 6, 1914.) A medium-sized ornamental tree, with large, feathery foliage, bearing tufts of yellowish white flowers. Found on mountain slopes of decomposed rock. Roots sent in under No. 1211 [S. P. I. No. 38285]."

40732. LESPEDEZA sp. Fabaceæ.

"(No. 2257a. Near Kanchuan, Kansu, China. October 9, 1914.) A small shrub, found on loess mountain slopes. Of value as a soil binder and possibly as a fodder shrub for sandy regions."

40733. VITIS sp. Vitaceæ. **Grape.**

"(No. 2258a. Near Chaolienli, near Fenghsien, Shensi, China. September 17, 1914.) Wild grapes found among tall scrub. The same remarks apply to it as to No. 2164a [S. P. I. No. 40026.]"

40734 and 40735. COTONEASTER spp. Malaceæ.

40734. "(No. 2259a. Near Taipintze, near Taochow, Kansu, China. November 29, 1914.) A very small shrub, found at altitudes between 6,000 and 11,000 feet above the sea, crawling between stones and grass. Of value as a rockery plant for cold regions. Chinese name *Lao wan shan shu*, meaning 'old creeping mountain tree.'"

40735. "(No. 2260a. Near Paodji, near Siku, Kansu, China. November 6, 1914.) A medium-sized shrub, with small foliage, bearing black berries. Found in stony places at an altitude of 7,000 feet above the sea. Of value as an ornamental garden shrub for cool regions."

40736. PYRACANTHA CRENULATA (Don) Roemer.
(*Crataegus crenulata* Don.)

"(No. 2261a. Near Yaupuko, near Chenghsien, Kansu, China. October 6, 1914.) A small shrub, with small, orange-colored berries and very small foliage. Found on stony mountain sides. Of value as a very ornamental rockery shrub for those sections of the United States where temperatures do not go down very low. Collected at an altitude of 3,500 feet above the sea."

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

40737. Pyracantha crenulata (Don) Roemer.
(*Crataegus crenulata* Don.)

"(No. 2262a. Near Hweihsien, Kansu, China. September 26, 1914.) A shrub of medium small dimensions, closely allied to *Pyracantha coccinea*, having small glistening-green foliage and bearing a multitude of bright-red berries. Found in stony places at altitudes between 3,000 and 5,000 feet above the sea. Of value as a very ornamental rockery shrub for those sections of the United States where temperatures do not go down very low."

40738. Ampelopsis aconitifolia Bunge. Vitaceæ.

"(No. 2263a. Near Meihsien, Shensi, China. September 9, 1914.) A trailing vine, closely resembling *Ampelopsis dissecta*, but with larger leaves and broader winged leaflets. Color of berries dull yellow. Found between stony débris. Of value as a porch and trellis vine, especially for the drier sections of the United States."

40739. Ampelopsis sp. Vitaceæ.

"(No. 2264a. Near Nanchichen, near Tsuanchen, Shensi, China. September 5, 1914.) A trailing vine, making long annual shoots, which sprout up from a short woody base or crown; leaves dissected, berries dark violet-black. Found amongst stony débris. Of use as a cover plant for hiding stony and unsightly places; also for planting along terraces."

40740. Eupatorium sp. Asteraceæ.

"(No. 2265a. Near Siku, Kansu, China. October 28, 1914.) A small shrub, found on dry, stony places and in dry, pebbly river beds, having masses of flowers, the rays of which are white, while the heart is yellow. Of value as a border and rockery shrub for dry regions. Collected at an altitude of 4,500 feet."

40741 and 40742. Nicotiana spp. Solanaceæ. **Tobacco.**

40741. Nicotiana tabacum L.

"(No. 2266a. Kwatsa, Kansu, China. November 10, 1914.) A variety of tobacco, grown in a semiarid district, at an altitude of 4,000 feet above the sea. To be tested for its nicotine content. Chinese name *Ta yeh yen*, meaning 'large-leaved herb.'"

40742. Nicotiana rustica L.

"(No. 2267a. Near Kanchuan, Kansu, China. October 8, 1914.) A small-leaved, coarse tobacco, much grown in the mountain regions of western China, where it is too cool for the ordinary tobacco to succeed. From its leaves, when pressed into cakes, a finely cut product is made by being planed off, which is smoked in water pipes exclusively. Chinese name *Lan hua yen*, meaning 'blue-flowered herb.'"

40743. Abutilon theophrasti Medic. Malvaceæ.
(*Abutilon avicennae* Gaertn.)

"(No. 2268a. Near Nanchichen, near Tsuanchen, Shensi, China. September 5, 1914.) A variety of this well-known fiber plant, with stems of dark-violet color, growing from 8 to 10 feet tall on rich bottom lands. Suggested as a possible paper producer. Chinese name *Pai ma*, meaning 'white hemp.'"

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

40744. Psoralea corylifolia L. Fabaceæ.

"(No. 2269a. Near Kweihsien, Shensi, China. September 11, 1914.) An annual herb, growing from 5 to 8 feet tall, cultivated here and there in patches on rich bottom lands. Said to be utilized for medicinal purposes only, the seeds being ground up and forming the main ingredient in Chinese kidney plasters. Of value possibly as a fodder plant for the warmer sections of the United States. Chinese name *Ku p'u chih*, meaning 'great illness medicine.'"

40745. Astragalus sp. Fabaceæ.

"(No. 2270a. Near Yangsa, near Titaochow, Kansu, China. November 30, 1914.) An annual herb, found among scrub at an altitude of 8,000 feet above the sea, producing much herbage; of value possibly as a forage plant for the cooler sections of the United States."

40746 and 40747. Hedysarum sp. Fabaceæ.

40746. "(No. 2271a. Near Liangsui, Kansu, near Fenghsien, Shensi, China. October 18, 1914.) A low-growing perennial herb, found in dry places, amidst stony débris, and on decomposed slate rocks. Produces large spikes of beautiful rosy flowers; seed pods slightly spiny. Of value as an ornamental rockery plant for dry regions; also possibly of use as a forage plant."

40747. "(No. 2272a. Near Liangtang, Kansu, China. September 24, 1914.) A semiwoody, small shrub, growing about 2 feet in height, found on loess mountain slopes. Of interest as a possible forage shrub."

40748 and 40749. Medicago spp. Fabaceæ. **Alfalfa.**

40748. Medicago sativa L.

"(No. 2273a. Near Titaochow, Kansu, China. December 2, 1914.) An alfalfa, found wild along the Tao River among briers and scrub at an altitude of 7,000 feet above the sea. To be tested in dry northern localities."

40749. Medicago ruthenica (L.) Trautv.

"(No. 2274a. Near Kiucheng (New Taochow), Titaochow, Chingningchow, etc., Kansu, China. November and December, 1914, and January, 1915.) A small alfalfa, of low, crawling growth, found along embankments and on loess table-lands at altitudes between 7,000 and 10,000 feet above the sea in a semiarid climate. Of value as a pasture plant for dry, highly elevated localities."

40750. Erodium sp. Geraniaceæ. **Crane's-bill.**

"(No. 2275a. Central Shensi, China. September 2 to 18, 1914.) A crane's-bill found along roadsides and on pebbly embankments; of vigorous growth. Of value apparently as a forage plant for the drier sections of the United States. Also to be tested as a winter crop along the Pacific coast."

40751. Lilium sp. Liliaceæ.

"(No. 2276a. Hweihsien, Kansu, China. September 28, 1914.) A lily of robust growth, being from 4 to 6 feet high; leaves large; flowers said to be white with dark spots. Obtained from the garden of the Roman Catholic Mission in Hweihsien; the bulbs originally were collected in the mountains south of Hweihsien."

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

40752. Artemisia sp. Asteraceæ.

"(No. 2277a. Near Liangdjapa, near Siku, Kansu, China. November 19, 1914.) A composite of dense growth, occurring in tufts on stony mountain slopes and amidst decomposed slate débris. Flowers yellow, without rays, produced in dense clumps. Blooming during October and ripening its seeds late in November. Of value as a striking rockery plant for dry regions."

40753 and 40754. Chrysanthemum spp. Asteraceæ.

Chrysanthemum.

40753. Chrysanthemum indicum L.

"(No. 2278a. Near Akansan, south of Lanchowfu, Kansu, China. December 6, 1914.) A wild chrysanthemum, found in dry loess cliffs and in pebbly banks, producing masses of yellow flowers. Foliage dissected and of a grayish color. Very variable as regards sizes of flowers, foliage, and general looks. Of value as a striking rockery plant for dry regions."

40754. Chrysanthemum morifolium (Ramat.) Hemsl.
(*Chrysanthemum sinense* Sabine.)

"(No. 2279a. Near Hwoshanpu, near Lungteh, Kansu, China. January 13, 1915.) A wild chrysanthemum with margueritelike flowers; of low growth; found on moist mountain slopes at elevations between 7,000 and 9,000 feet above the sea. Of value as a striking rockery plant, needing somewhat moister locations than the preceding numbers [S. P. I. Nos. 40752 and 40753.]"

40755. Ceratostigma plumbaginoides Bunge. Plumbaginaceæ.

"(No. 2280a. Near Siku, Kansu, China. November 5, 1914.) A pretty semiwoody perennial with deep-blue flowers; found on dry rocky places and along slate ledges. Of value as a striking rockery plant. Collected at an altitude of 4,500 feet above the sea."

40756. Limonium sp. Plumbaginaceæ.

"(No. 2281a. Near Tungpu, south of Lanchowfu, Kansu, China. December 5, 1914.) A Statice with lemon-colored flowers and finely dissected foliage, occurring on dry loess cliffs and decomposed rocky ledges; quite ornamental; of value as a striking rockery plant. Collected at an altitude of 5,500 feet above the sea."

40757. Scopolina tangutica (Maxim.) Kuntze. Solanaceæ.
(*Scopolia tangutica* Maxim.)

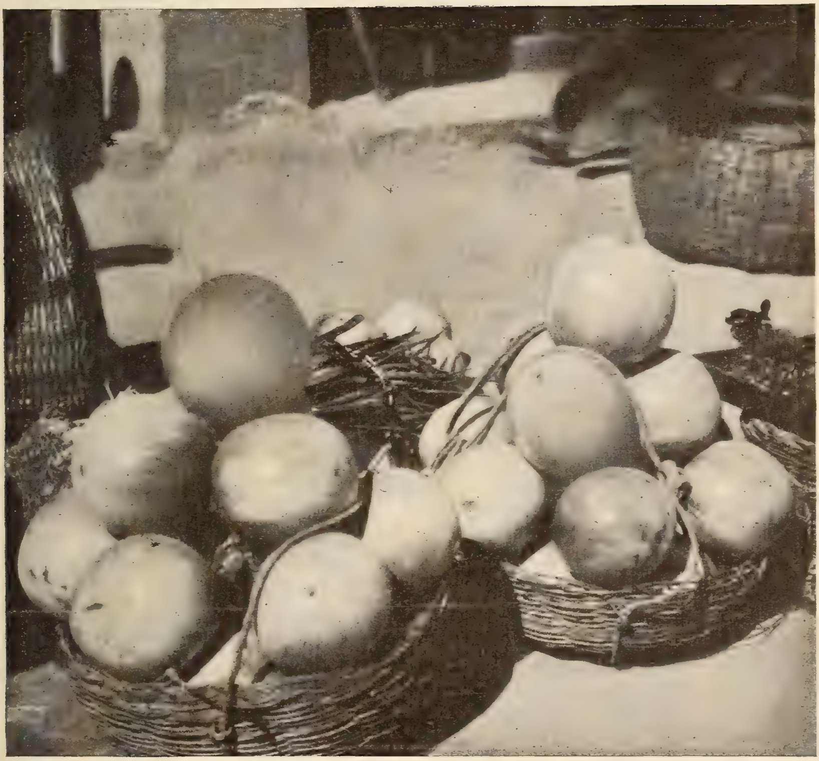
"(No. 2282a. Near Taochow, Kansu, China. November 25, 1914.) An interesting solanaceous herbaceous perennial with large and peculiar fringed seed vessels. Apparently of some medicinal virtue. Collected at an altitude of over 9,000 feet above the sea; occurring on waste places."

40758. Humulus lupulus L. Moraceæ. Hop.

"(No. 2283a. Near Chenyatan, near Titaochow, Kansu, China. December 2, 1914.) Wild hops, occurring in many mountain valleys in Shensi and Kansu. The cones are smaller than in cultivated strains, but they contain a great percentage of lupulin and are very fragrant. Collected at an altitude of over 6,000 feet above the sea."

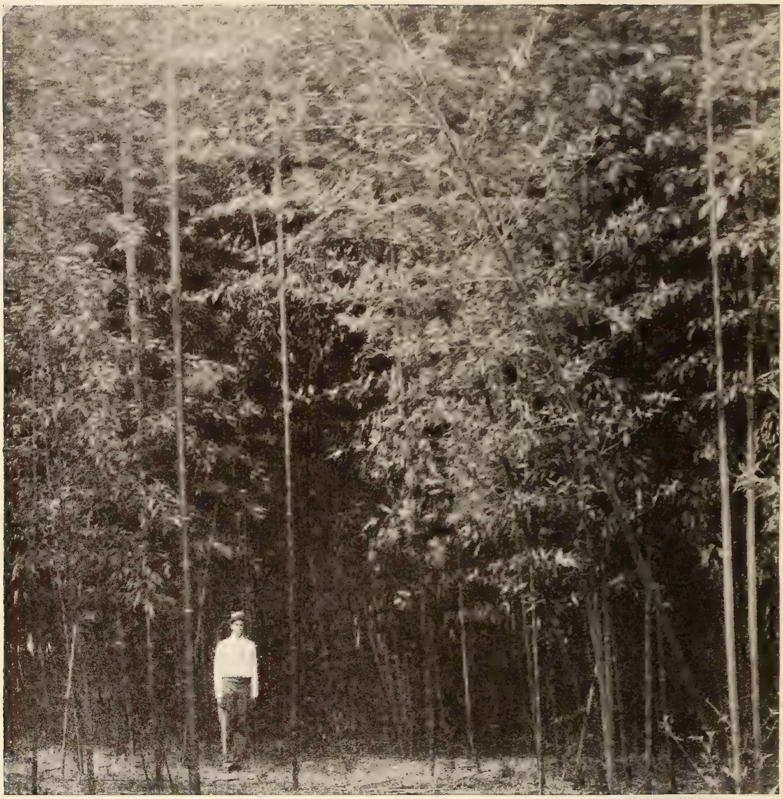
40759. Solanum melongena L. Solanaceæ. Eggplant.

"(No. 2284a. Yangpingkwan, Shensi, China. September 10, 1914.) A variety of eggplant, having very large fruits of purplish white color.



WHITE EGGPLANTS (SOLANUM MELONGENA L.) FROM CHINA (S. P. I. NO. 40759).

Baskets of very large fruits of a variety of eggplant of purplish white color and attractive appearance. In parts of China the eggplant is a very important vegetable. (Photographed by Mr. Frank N. Meyer, at Yangpingkwan, Shensi, China, Sept. 10, 1914; P12203FS.)



THE SMITH BAMBOO GROVE AT BURROUGHS, NEAR SAVANNAH, GA. (PHYLLOSTACHYS SP.; S. P. I. NO. 40842).

A grove of an undetermined species of bamboo which is certainly distinct from either *P. bambusoides* (*P. quilioi*) or *P. pubescens* (*P. mitis*), and which is reported by Mr. S. B. Dayton, who directed our attention to this grove, to have been introduced from India by Mr. Andre Moynelo about 30 years ago. The tallest culms were in 1915 about 55 feet high and 14¾ inches in circumference, and the grove covers an area of about an acre. The young shoots of this bamboo have been cooked as a vegetable and found to have an excellent flavor and texture. The late Allen Groves is standing among the trees. (Photographed by Mr. Peter Bisset, Burroughs Station, Ga., July 28, 1915; P14013FS.)

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

Grown under irrigation on rich flats along the Wei River. A good market variety apparently."

For an illustration of these eggplants, see Plate V.

40760. SOLANUM MELONGENA L. Solanaceæ. **Eggplant.**

"(No. 2285a. Paihsiangchen, Shansi, China. August 10, 1914.) A variety of eggplant with medium-large fruits of pure white color. Chinese name *Pai ch'ieh tzŭ,* meaning 'white egg fruit.'"

40761. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

"(No. 2286a. Shensi Province, China. September, 1914.) Mixed varieties of chili peppers, much grown for condiments and used with every meal, taking the place apparently of meats and gravies with the Chinese country population."

40762. CUCUMIS SATIVUS L. Cucurbitaceæ. **Cucumber.**

"(No. 2287a. Sianfu, Shensi, China. August 22, 1914.) A variety of cucumber of oblong, heavy shape, generally ribbed, able to stand more drought and heat than ordinary cucumbers, but not as fine in quality, having greater seed cavities. Chinese name *Ts'ai kua,* meaning 'vegetable gourd.'"

40763. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Watermelon.**

"(No. 2288a. Lanchowfu, Kansu, China. December 28, 1914.) A watermelon, said to be large and very sweet, having dark-red flesh and white seeds. Grown at Chungkwanying, to the north of Lanchowfu. Obtained from Father C. Coppisters, of the Belgian Roman Catholic Mission at Lanchowfu. To be tested in semiarid localities."

40764. CUCUMIS sp. Cucurbitaceæ.

"(No. 2289a. Near Meihsien, Shensi, China. September 9, 1914.) A cucurbit of trailing growth, occurring as a weed in fields. Apparently a primitive form of melon, presumably of botanical interest."

40765. CAPRIOLA DACTYLON (L.) Kuntze. Poaceæ. **Bermuda grass.**
(*Cynodon dactylon* Pers.)

"(No. 2290a. Near Madjakey, near Chiehchow, Kansu, China. October 10, 1914.) A grass of very low growth, with running rhizomes found amidst stony débris and on pebbly and sandy wastes along mountain streams, forming a dense mat of turf. Of value apparently as a lawn grass for sandy locations. Does not require any mowing."

40766 and 40767. IRIS ENSATA Thunb. Iridaceæ. **Iris.**

40766. "(No. 2291a. Near Taipintze, near Taochow, Kansu, China. November 29, 1914.) An Iris of very low growth, found along roadsides at altitudes of 10,000 feet above the sea. Of value as a very hardy herbaceous perennial to line paths and flower beds in parks and gardens in dry and cold localities."

40767. "(No. 2292a. Pingliang, Kansu, China. January 16, 1915.) A low-growing Iris, somewhat more vigorous than the preceding number; otherwise the same remarks apply to it. This Iris is so hardy that frequently cart and mule traffic over it does not destroy it at all, but only stunts the plants somewhat."

40768. ROSA BANKSIAE NORMALIS Regel. Rosaceæ. **Rose.**

"(No. 2293a. Near Chenghsien, Kansu, China. September 30, 1914.) A wild rose, of very vigorous growth, found as big clumps amidst scrub

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

or as solitary specimens in stony places. Makes long annual shoots, which lean over in a characteristic way. Of value possibly as a stock and as a factor in hybridization experiments. Collected at an altitude of 3,000 feet above the sea."

40769. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Watermelon.**

"(No. 2294a. Peking, China, March 20, 1915.) Mixed varieties of watermelons, which are grown for their seeds only. These seeds sell on the Peking market at 12 to 14 dollars Mexican silver per 125 pounds. To be tested in semiarid localities. Chinese name *Ta kua*, meaning 'big gourd.'"

40770. INDIGOFERA sp. Fabaceæ.

"(No. 2295a. Near Tanchang, Kansu, China. November 20, 1914.) A small shrub, occurring on stony places, having small racemes of rose-colored flowers; foliage slightly tomentose. Of use as a rockery shrub for dry regions."

40771. HELIOTROPIUM CURASSAVICUM L. Boraginaceæ. **Beach heliotrope.**

From Kingston, Jamaica. Presented by Mr. W. Harris, superintendent. Hope Gardens. Received May 17, 1915. Introduced for the studies of Prof. J. C. Arthur, of Purdue University.

Plants.

40772. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Pummelo.**
(*Citrus decumana* Murr.)

From Peking, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 11, 1915.

"(No. 2296a. March 20, 1915.) A very large pummelo, of pearlike shape; rind very heavy; segments separating easily; flesh dry and sweet, containing many seeds. A dessert fruit in a class by itself." (*Meyer.*)

40773. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanic Station. Received May 19, 1915.

"Wild sorghum from Anse aux Pins, growing in a cemetery." (*Dupont.*)

40774. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bael fruit.**
(*Aegle marmelos* Corr.)

From Kandawglay, Rangoon, India. Presented by Mr. J. Gibbons, superintendent, Agri-Horticultural Society of Burma. Received May 19, 1915.

"These seeds are from very good fruits and are quite fresh." (*Gibbons.*)

See S. P. I. No. 38664 for previous introduction and description.

40775. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Guayaquil, Ecuador. Presented by Mr. Frederick W. Goding, American consul general. Received May 17, 1915.

"Violet-colored potatoes from Ecuador." (*Goding.*)

40776 to 40782.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received May 15, 1915. Quoted notes by Dr. Proschowsky, except as otherwise indicated.

40776. Albizzia moluccana Miq. Mimosaceæ.

For previous introduction and description, see S. P. I. No. 25783.

40777. Alpinia nutans (L.) Roscoe. Zinziberaceæ. **Shell flower.**

"A magnificent ornamental plant, quite hardy here."

"Striking plant, reaching 10 to 12 feet, with long lanceolate, glabrous, long-veined leaves; flowers orchidlike, yellow with pink, sweet scented, in a long drooping terminal spikelike raceme. Fine for foliage masses and an old favorite. Said to grow 20 feet high in southern California in rich soil with plenty of water and to bloom continuously." (*Bailey, Cyclopedia of Horticulture, vol, 1, p. 265.*)

40778. Amerimnon sissoo (Roxb.) Kuntze. Fabaceæ.
(*Dalbergia sissoo* Roxb.)

"A deciduous tree of the sub-Himalayan tracts from the Indus to Assam, ascending to 3,000 feet, but probably nowhere in India, strictly speaking, indigenous. Gamble remarks that it is often, however, gregarious on the banks of sandy, stony, torrential rivers. On higher lands it may grow and grow well, though not gregariously unless planted. Cultivated and often self-sown on the plains of India. But even when the trees are growing close together the shade given is light; hence sissu is an important shade tree with tea planters of Dehra Dun. The seed on germinating at once makes a great length of root compared to its growth above ground, a circumstance that greatly minimizes the chance of its being swept away when spontaneous germination takes place within the sandy and stony beds of rivers. Sissu coppices well and reproduces itself freely from suckers. Artificially it is best grown from seed deposited in suitable positions, because transplantation is sometimes difficult and the young trees have to be protected till fairly established. It grows most luxuriantly on low-lying sandy tracts and has been successfully raised on irrigated lands. But it is reputed that the timber of trees raised under irrigation is of poor quality and subject to serious damage by fungi. When young the growth of sissu is very quick; it is said to attain a 2½-foot girth in 12 years, but as it gets older its growth gets slower. The full height of a tree is about 60 feet or so, and in girth it is rarely more than 6 feet. It is very successfully grown in Sind, and is said to be the best hardwood of the Punjab.

"The wood is very durable, seasons well, and does not warp or split. It is highly esteemed for all purposes where strength and elasticity are required, as, for example, agricultural implements, wheelwrights' work, frames of carriages, boat building, etc. At one time it was extensively employed for gun carriages, but owing to the limited supply of the timber it is now very little used for that purpose. It is one of the finest timbers in India for furniture and wood carving, and is in regular demand all over the north of India. In Upper India the shisham wood (*Dalbergia sissoo*) replaces very largely the rosewood (*D. latifolia*) of western and southern India. It attains its position of greatest importance in the United Provinces, the Central Provinces, and the Punjab, being replaced on the north by deodar and to the south by sal and rosewood. The wood

40776 to 40782—Contd. (Quoted notes by Dr. A. R. Proschowsky.)

carving of Seharunpur, Farakhabad, Lucknow, and Nagpur and the inlaid work of Chiniot, Hosiarpur, Jallandhar, and Mainpuri are largely on shisham. In Rajputana, also, this wood is to a considerable extent employed by the wood carvers, but for particulars of the methods of treatment and styles of carving the reader should consult Indian Art at Delhi, 1903 (pp. 103, 108–9). Owing to the fact that the sissu very rarely grows straight, the timber is not of much use for beams, though it is in much demand for knees of boats. It has been successfully tried for railway sleepers; it is an excellent fuel and makes very good charcoal, but it is too expensive to be utilized for these purposes. The wood is said to yield an empyreumatic medicinal oil, and the raspings of the wood are officinal, being regarded as alterative. Near towns the trees are largely lopped for fodder, and the fallen leaves collected and valued as fuel by the sweetmeat makers." (*Watt, The Commercial Products of India, p. 485–486.*)

40779. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

"Quite hardy here and therefore wonderfully useful as a stock upon which to graft good varieties."

40780 and 40781. COCOS ODORATA Barb. Rodr. Phœnicaceæ.

40780. "Selected from the very best of the fruits." Received as *Cocos capitata.*

40781. "Edible and of pleasant taste but many fibers. There should be little doubt that by selection better fruits could be obtained."

40782. SANTALUM ALBUM L. Santalaceæ. **Sandalwood.**

See S. P. I. Nos. 6449 and 8679 for description.

"A small evergreen tree met with in the very dry regions of South India and in North India chiefly as a cultivated plant. It affects open forest lands with grass and patches of other trees, usually frequenting red or stony soils. It is a root parasite on a long series of host plants and hence apparently the difficulties experienced in systematic plantations where provision has not been made for this requirement. On rich soil the plant grows well, but the wood is deficient in odour, consequently inferior commercially. Lushington and other officers of the Forest Department have devoted much careful study to the cultivation of sandal, more especially in relation to the production of the maximum percentage of rich-scented wood. Lushington observes: 'On the whole I am inclined to think that the best way of aiding the reproduction of sandalwood artificially is to increase the scrub, and this is best effected by merely keeping out fire and grazing. As soon as the scrub reaches 2 or 3 feet sandal reproduces naturally from seed dropped by birds, and this may perhaps be further assisted by dibbling.' Rama Rao urges that weeding is dangerous and that only surface pruning when the scrub becomes too dense should be indulged in. Lushington mentions 8 inches' growth in girth per ten years as a safe average and the exploitable age of the tree as forty years, the minimum size being then 32 inches at 4½ feet from the ground." (*Watt, Commercial Products of India, p. 976.*)

40783 and 40784. Cucumis sativus L. Cucurbitaceæ. **Cucumber.**

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Gardens. Received May 19, 1915. Quoted notes by Mr. Hartless.

40783. "This is a variety of the common cucumber of dwarf bushy habit, producing an egg-shaped fruit, dark green and more or less mottled with white markings when young and of the same rusty brown color when ripe. Although not the gherkin of the West Indies, familiar to most persons in its pickled state, its fruit resembles that of the latter; hence its Anglo-Indian appellation. Like the common climbing cucumber, it will succeed in any good soil, but it requires more aid from manure than the former to bear abundantly. When preparing the ground for the reception of the seed, it should therefore be liberally enriched with manure of the farmyard class, then laid out in ridges 6 inches high and 15 inches apart, and the seeds sown along the two sides of the ridges at 3 or 4 inches asunder. The furrows between the ridges should be watered every fourth or fifth day, and the soil stirred and loosened at every opportunity. As the plants yield the immature fruit required at table for only a limited period of time, sowings should be made at intervals of a fortnight from the beginning of March to the end of May. This variety of cucumber is a purely hot-weather crop and does not succeed if sown during the rainy season."

40784. "Long green; rainy season."

40785 to 40787.

From Tiflis, Caucasus, Russia. Presented by the director, Botanic Gardens. Received May 10, 1915.

40785. Mespilus germanica L. Malaceæ. **Medlar.**
(*Pyrus germanica* Hook. f.)

See S. P. I. Nos. 8298, 27702, and 29197 for previous introductions and description.

"A low deciduous tree of crooked, picturesque habit, usually under 20 feet high; young branchlets very hairy, older ones armed with stiff, straight spines one-half to 1 inch long. Leaves almost without stalks, lanceolate or oval, 2 to 5 inches long, minutely toothed, downy on both surfaces, but more so beneath. Flowers solitary at the end of short leafy branches; about 1 inch across, white or slightly pink, produced on a very short woolly stalk, in May or early June. Petals five, roundish; sepals covered with gray wool, triangular at the base, drawn out into a long, narrow point standing out beyond the petals. Fruit 5 celled, apple shaped, brown, with a broad open eye, surrounded by the persistent calyx, and showing the ends of the bony seed vessels. The wild medlar is a native of Europe and Asia Minor, and is found wild in the woods of several counties in the south of England, notably Sussex and Kent, but it is not believed to be truly indigenous. It has long been cultivated for its fruit in English orchards, and several named varieties exist. The cultivated forms are distinguished by thornless or nearly thornless branches, by larger, broader leaves, and by larger fruits, up to 1½ or 2 inches across. Although much esteemed by those who have acquired the taste for them, medlars are not a popular fruit. They should be left on

40785 to 40787—Continued.

the tree until the end of October or later, then stored in a fruit room until they are 'bletted,' a term given to indicate a state of incipient decay. A jelly made from the fruits meets a more general taste. The medlar is most closely allied to Crataegus, differing in the solitary flower, etc. It is very hardy, and not particular as to soil." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 81.*)

40786. PRUNUS SPINOSA L. Amygdalaceæ. **Plum.**

See S. P. I. No. 38426 for previous introduction and description.

40787. RUBUS ULMIFOLIUS Schott. Rosaceæ.

"A vigorous shrub whose more or less plum-colored, arching stems are clothed with starry down and armed with long, broad-based prickles; they root freely at the tips. Leaves composed of three or five leaflets radially arranged, which are slightly downy above but white-felted beneath, rather finely toothed. Flowers bright rosy red, and produced in showy, cylindrical panicles. This well-marked species is of little value as a fruiting bramble, its berries being small and dryish, but from it several ornamental garden varieties have been obtained. It is widely spread over the United Kingdom (except Scotland) and Europe generally." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 470.*)

40788 to 40797.

From Lima, Peru. Procured from Senor J. A. MacKnight, director, Escuela Normal de Varones. Received May 18, 1915. Quoted notes by Mr. MacKnight.

40788 to 40790. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

40788. Lot 1.

40789. Lot 2.

40790. Lot 3.

40791 to 40796. ULLUCUS TUBEROSUS Caldas. Basellaceæ. **Oca.**

40791. Lot 1. "Yellowish white with red spots, fine quality."

40792. Lot 2. "Mottled, white and red, fine quality."

40793. Lot 3. "Yellowish, fine quality."

40794. Lot 4. "Mottled, round, fine quality."

40795. Lot 5. "Red, fine quality."

40796. Lot 6. "Greenish, fine quality."

Tubers.

40797. CHENOPODIUM QUINOA Willd. Chenopodiaceæ. **Quinoa.**

"Of a very fine quality."

40798 to 40802.

From Albano, Stockholm, Sweden. Presented by the director, Botanic Garden. Received May 10, 1915.

40798 to 40800. LATHYRUS spp. Fabaceæ.

Introduced for the breeding experiments of Mr. David Burpee.

40798. LATHYRUS CICERA L. **Everlasting pea.**

Stems usually prostrate or ascending, up to 2 dm. (8 inches) long, slightly winged, glabrous. Leaves with small winged petioles and one pair of leaflets; the upper with simple undivided tendrils, half as long as the leaflets; the lower not cirrose. Leaflets of the lower

40798 to 40802—Continued.

leaves elongate-elliptic, obtuse; those of the upper larger, lanceolate, short mucronate, from less than 1 cm. to about 9 cm. long, 4 to 10 mm. broad. Stipules large, about as long or slightly longer than the petiole, lanceolate, semisagittate. Inflorescence 1 flowered. Flowers up to 1 cm. long, erect or nodding. Petals dull red, of varying length. Standard obovate, emarginate, brown veined, seldom clear, longer than the wings; these longer than the keel. Keel whitish, dull violet on the tip. Europe. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, p. 1006, 1910.*)

40799. LATHYRUS PISIFORMIS L.

See S. P. I. No. 32192 for previous introduction and description.

40800. LATHYRUS SPATHULATUS Celak.

Glabrous plants with ascending, sharply angled stems. The lower stems leafless, the upper remotely leaved. Leaves subdigitate, quaternate, short petioled. Leaflets narrowly linear-lanceolate, mucronate-acuminate, short subciliolate. Stipules narrowly linear, semisagittate, longer than the short petioles. Petioles slender, elongated, much exceeding the leaves, loosely 5 to 8 flowered. Corolla blue; standard obovate-obtuse, much longer than the keel; keel obtuse, not bearded; wings covering and exceeding the keel. (Adapted from *Celakovsky, Oesterreichische Botanische Zeitschrift, vol. 38, p. 6, 1888.*)

40801 and 40802. OENOTHERA spp. Onagraceæ.

Introduced for the work of Mr. H. H. Bartlett in plant breeding.

40801. OENOTHERA ODORATA Jacq. **Evening primrose.**

40802. OENOTHERA PUMILA L. **Small sundrop.**

40803. LATHYRUS CYANEUS (Stev.) C. Koch. Fabaceæ.

From Paris, France. Presented by Prof. Julien Costantin, Musée d'Histoire Naturelle. Received May 10, 1915. Introduced for the breeding experiments of Mr. David Burpee.

This plant is similar to *L. sessilifolius*, but the leaves are more distinctly nerved. The standard is twice longer than the calyx (subequal in *L. sessilifolius.*) The calyx is larger and more retuse at the base. Keel less acuminate. Color of the flowers more intensely blue, with slighter tendency toward purple. The four leaflets are ensiform. (Adapted from *Steven*, in *Mémoires de la Société des Naturalistes de Moscou, vol. 4, p. 91, 1913.*)

40804. RAPHIA TAEDIGERA Martius. Phœnicaceæ. **Palm.**

From San Jose, Costa Rica. Presented by Mr. J. E. Van der Laat, director, Department of Agriculture. Received May 4, 1915.

"Seeds proportionately oily and resinous, so that they have commanded the attention of certain industries in North America." (*Van der Laat.*)

One of the most striking palms which grow in the rich alluvial bottoms along the lower Amazon River. The trunk does not exceed 6 or 8 feet in height and is about a foot in diameter, clothed for the most part with the persistent sheathing bases of the leafstalks. The leaves are feather shaped and are among the largest in the vegetable kingdom, some of them reaching 40 to 50 feet in length and covering a surface of more than 200 square feet. The flowers are of a greenish olive color and densely crowded, and the fruit is about the size of a hen's egg or smaller and is covered with large scales. The leafstalk is 12 to 15 feet long and

4 or 5 inches in diameter, and the smooth glossy rind is split off and used for making baskets and window blinds. The inner portion is used for making shutters, boxes, partitions, and even entire houses. The seed kernels are extremely hard and are said to be suitable for the manufacture of buttons. This palm also grows abundantly in the low marshy lands in the Atlantic coast region of Costa Rica, where it is called *Yolillo*. In the Amazon region it is called *Jupati*. (Adapted from *Martius, Histoire Naturelle des Palmiers vol. 3, p. 217, 1833–1850.*)

40805. COLOCASIA ESCULENTA (L.) Schott. Araceæ.

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Received May 13, 1915.

"*Yatsu gashira.*"

"Said by Hon. T. H. Kuwashima, of Tokyo, to be similar in quality to the Trinidad dasheen." (*Fairchild.*)

Received as *Colocasia multiflora*, which seems to be only a trade name.

40806. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Arequipa, Peru. Presented by Mr. Leon Campbell, through Mr. W. F. Wight, of the Bureau of Plant Industry, for breeding work in Texas. Received May 24, 1915.

"Peaches grown from seed and brought into the market by the Indians. Many of them are of excellent quality, and some may prove well adapted to regions susceptible to drought periods and also to regions of extreme heat." (*Wight.*)

40807. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Concepcion, Chile. Presented by Mr. G. F. Arms, through Mr. W. F. Wight, of the Bureau of Plant Industry, for breeding work in Texas. Received May 24, 1915.

"Three varieties which were mixed by a servant while drying them." (*Arms.*)

"Peaches in Chile are grown very largely from seed and are of high quality. This lot was obtained in the market of Concepcion and had been grown without irrigation. Will probably prove of value in dry regions." (*Wight.*)

40808. CORNUS MACROPHYLLA Wallich. Cornaceæ.

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Received May 22, 1915.

"A deciduous tree, 30 to 50 feet high; young shoots smooth or nearly so. Leaves opposite, ovate to roundish or oblong, the base rounded or tapering, the apex with a slender, often taillike point; 4 to 7 inches long, 2 to 3½ inches wide; bright green, and soon becoming smooth above; glaucous beneath, and at first clothed with pale, flattened, minute hairs attached at their middle; veins in six to eight pairs; stalks one-half to 1¼ inches long. Flowers yellowish white, numerous, produced in terminal, somewhat rounded cymes 4 to 6 inches across; each flower one-half inch diameter; petals oblong; calyx minutely toothed, grey with minute down. Fruit globose, one-fourth inch diameter, blue when ripe. Blossoms during July and August. Native of the Himalayas, whence it was introduced in 1827, China, and Japan. It is a handsome and striking small tree, chiefly noteworthy for its fine foliage; the flowers, although profusely borne, are of too dull a white to be very effective. There is a tree approaching 40 feet in height in Coombe Wood nursery. Much confusion has existed between this species and *C. controversa* which, although an alternate-leaved species, has long been known on the Continent as *C. macrophylla.*" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 390.*)

See S. P. I. Nos. 13994, 13995, and 21971 for previous introductions.

40809. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Watermelon.**

From Canton, China. Presented by Prof. G. W. Groff, Canton Christian College, through Mr. F. D. Cheshire, consul general. Received May 24, 1915.

"Obtained in March from a melon of the red variety, grown at Nanhsiung, North River, Kwangtung Province." (*Groff.*)

40810 to 40815.

From Petrograd, Russia. Presented by the director, Imperial Botanic Garden. Received May 21, 1915.

40810 to 40813. LATHYRUS spp. Fabaceæ.

Introduced for the breeding experiments of Mr. David Burpee.

40810. LATHYRUS ANNUUS Hoejer.

Stalks glabrous, prostrate, winged, 2 to 7 dm. long. Leaves with broadly winged petioles. Leaflets 3 to 4 times as long as the petioles, lanceolate, short acuminate. Stipules small, semisagittate, not as long as the petiole. Petals yellow, often reddish on the edges. Standard striped with brown. Keel greenish white. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, pt. 2, p. 1004.*)

40811. LATHYRUS sp.

40812. LATHYRUS sp.

This species was received as *L. lusitanicus* Mart., a name which has not yet been found in the literature of this group.

40813. LATHYRUS PISIFORMIS L.

See S. P. I. Nos. 32192 and 40799 for previous introductions and description.

40814. PAEONIA ANOMALA L. Ranunculaceæ.

Var. *beresowskii* Komar.

40815. PRUNUS PROSTRATA Labill. Amygdalaceæ. **Bush cherry.**

See S. P. I. Nos. 28945 and 37642 for previous introductions and description.

40816 to 40823. CERATONIA SILIQUA L. Cæsalpiniaceæ. **Carob.**

From Valencia, Spain. Presented by Mr. Claude I. Dawson, American consul. Cuttings received May 24, 1915.

40816. "*Matalafera.*"

See S. P. I. Nos. 30914 and 35239 for previous introductions and description.

40816 to 40823—Continued.

40817. "*Casuda.*"

See S. P. I. Nos. 30915 and 35238 for previous introductions and description.

40818. "*Roja Vera.*"

See S. P. I. Nos. 30918 and 35245 for previous introductions and description.

40819. "*Macho de Flor Colorada.* Red-flowered male."

See S. P. I. Nos. 30916 and 35230 for previous introductions and description.

40820. "*Macho de Flor Amarilla.* Yellow-flowered male."

See S. P. I. Nos. 30917 and 35242 for previous introductions and description.

40821. "*Vera.*"

See S. P. I. No. 35240 for previous introduction.

40822. "*Flor de Altramuz.*"

See S. P. I. No. 35244 for previous introduction.

40823. "*Roja Vera.*"

See S. P. I. Nos. 30918 and 35245 for previous introductions and description.

40824. CITRUS HYSTRIX DC. Rutaceæ. **Wild orange.**

From Tutuila, American Samoa. Presented by the governor of American Samoa, through Mr. W. E. Safford, of the Bureau of Plant Industry. Received June 2, 1915.

"Collected April, 1915. Seeds of the wild orange of Samoa, *Citrus hystrix* DC. (*Citrus aurantium saponacea* Safford, Contr. U. S. National Herb., vol. 9, p. 226, 1905), called *moli* or *moli vao* (forest moli) or *moli u'u* (anointing moli) by the natives, who use it for washing. On account of its use as a detergent the name *moli* is applied by the Samoans to soaps of all kinds. The *moli vao* is a thorny tree growing spontaneously in the forests of Samoa, where it was undoubtedly established in prehistoric times. It also occurs in Fiji, and bears the same common name there. The glossy dark-green leaves have a crenate margin and a very broadly winged petiole, sometimes almost as large as the leaf itself. The flowers occur in axillary or terminal clusters. The smooth spheroid fruit is usually greenish yellow or lemon colored. The pulp is pleasantly aromatic, but not edible. It leaves a peculiar fragrance in the hair when used as a shampoo, and the natives say that it prevents dandruff and stimulates the growth of the hair. They make an infusion of the scraped bark of the tree as a remedy for pectoral affections and use a hot decoction of the leaves for asthma. This species is introduced as a possible stock for other less robust species of Citrus." (*Safford.*)

40825 to 40827.

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received June 2, 1915.

40825. ARTOCARPUS INTEGRA (Thunb.) L. Moraceæ. **Jack fruit.**
(*Artocarpus integrifolia* L.)

See S. P. I. Nos. 27170 and 38890 for previous introductions and description.

40825 to 40827—Continued.

40826. DURIO ZIBETHINUS Murray. Bombacaceæ. **Durian.**

See S. P. I. Nos. 28082, 34073, 37103, and 39709 for previous introductions and description.

40827. CANARIUM INDICUM Stickman. Balsameaceæ.
(*Canarium commune* L.)

See S. P. I. Nos. 20808, 21280, and 25684 for previous introductions and description.

"A large, handsome Malayan tree, characterized by a remarkable buttressed trunk and laterally compressed aerial basal roots; the latter develop enormous erect flanges of uniform thickness, so that solid circular pieces may occasionally be cut out from them to form ready-made cart wheels. The tree is much cultivated for shade or ornament in Java. It bears in great abundance large pendent clusters of dark-purple fruits, which are of the size of small plums; these are produced all the year round, but chiefly in June. The kernel of the fruit is edible, being similar in flavor to sweet almonds; it yields by expression an oil used for burning in lamps and for cooking purposes. A desirable tree for planting in avenues, etc. It thrives in hot and moist districts up to about 1,500 feet elevation and prefers deep, well-drained soil. Propagated by seed, which may be sown in nursery beds and kept moist and shaded until germinated." (*MacMillan, Handbook of Tropical Gardening and Planting.*)

40828 and 40829.

From Japan. Presented by Mr. Risaburo Ota, Hamamatsu, Shizouka Ken, Japan. Received May 28, 1915.

40828. CUCUMIS SATIVUS L. Cucurbitaceæ. **Cucumber.**

"A fine Japanese cucumber."

40829. CUCURBITA PEPO L. Cucurbitaceæ. **Squash.**

"*Chirimen.* A squash from Japan of very fine quality."

See S. P. I. Nos. 25594 and 26427 for previous descriptions.

40830. MALUS SYLVESTRIS Miller. Malaceæ. **Apple.**

From Angol, Chile. Presented by Mr. Manuel V. Bunster. Received May 29, 1915.

"Seeds of our *Huidobro* apple, which is quite as resistant to the woolly aphis as your *Northern Spy.* This apple is sweet and pleasant to eat and is esteemed by Chileans, but, nevertheless, to my taste, it can not compete with the *Newtown, Baldwin, Northern Spy,* or any other first-class European or American apple. These seeds have been extracted from picked apples, and you will find them very plump. This apple is ideal for those people who are too lazy to spray the trees. They bear early and heavily." (*Bunster.*)

40831. MACADAMIA TERNIFOLIA F. Mueller. Proteaceæ. **Queensland nut.**

From Sydney, New South Wales. Purchased from Anderson & Co. Received at the Plant Introduction Field Station, Chico, Cal., May 29, 1915.

See S. P. I. Nos. 18382, 33912, and 34437 for previous introductions and description.

40832. HOLCUS SORGHUM VERTICILLIFLORUS (Steud.) Hitchcock. Poaceæ. **Sorghum.**

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, Department of Agriculture, Pretoria, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received June 7, 1915.

Collected at our station at Tzaneen in northern Transvaal. (*Pole Evans.*)

40833. PERILLA FRUTESCENS (L.) Britton. Menthaceæ.
(*Perilla ocymoides* L.)

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received June 3, 1915.

See S. P. I. Nos. 22419, 27558, and 30298 for previous introductions and description.

40834. JUGLANS PORTORICENSIS Dode. Juglandaceæ. **Porto Rican walnut.**

From Porto Rico. Presented by Mr. D. W. May, Agricultural Experiment Station, Mayaguez. Received June 5, 1915.

See S. P. I. No. 40236 for previous introduction and description.

40835 and 40836. ANNONA spp. Annonaceæ.

From Cajabon, Guatemala. Presented by Mr. W. E. Curley, at the request of Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 3, 1915.

40835. ANNONA SCLERODERMA Safford. **Custard-apple.**

"*Pox-te.*"

See S. P. I. No. 40805 for previous introduction and description.

40836. ANNONA RETICULATA L. **Custard-apple.**

"*Red pox.*"

40837. PASSIFLORA LAURIFOLIA L. Passifloraceæ. **Passion fruit.**

From Honolulu, Hawaii. Presented by Mr. Garret P. Wilder. Received May 29, 1915.

"This strong-growing, glabrous vine, climbing by tendrils, is a native of tropical America and known there as the *yellow water-lemon.* The date when it was introduced to Hawaii and by whom is not known, but in the Hilo and Hamakua districts of Hawaii this variety grows wild. Its thick leaves are oval, oblong, and entire, and have a short, sharp point. The flowers are about 2½ inches across, are white with red spots on them. The fruit is slightly oblong, 2 inches in diameter, and very regular in size and shape. When ripe, it is yellow, spotted with white. It has a medium-hard shell or skin, and the edible pulp is whitish yellow and contains many flat, black seeds." (*G. P. Wilder, Fruits of the Hawaiian Islands, p. 214.*)

40838. CEDRELA ODORATA L. Meliaceæ. **Cedro.**

From Santiago de las Vegas, Cuba. Presented by Mr. J. T. Crawley, director, Agricultural Experiment Station, at the request of Mr. H. A. Van Hermann. Received June 1, 1915.

See S. P. I. Nos. 11769 and 26178 for previous introductions and description.

40839. (Undetermined.) **Monkey bread.**

From Mt. Coffee, Liberia. Presented by Mr. Henry O. Stewart. Received June 1, 1915.

40840. Brassica pekinensis (Lour.) Skeels. Brassicaceæ. **Pe-tsai.**

From Chefoo, China. Presented by Mr. A. Sugden, Commissioner of Chinese Customs, through Mr. John F. Jewell, American consul. Received May 27, 1915.

"Shantung cabbage."

40841. Telopea speciosissima (Smith) R. Brown. Proteaceæ. **Waratah.**

From Lawang, Java. Presented by Mr. M. Buysman, Botanic Garden. Received June 1, 1915.

See S. P. I. Nos. 15696 and 40064 for previous introductions and description.

"Although this beautiful and very uncommon evergreen shrub was introduced from the Blue Mountains of New South Wales as long ago as 1789, it has been seen very rarely in flower in England. The deep-crimson, tubular flowers are about 1 inch long, and are borne in a dense globular head surrounded by an involucre of ovate-lanceolate blood-red bracts, each measuring from 2 to 3 inches in length. The firm leathery leaves are cuneate-oblong in shape and measure about 6 inches long by 1½ inches broad. They are toothed in the upper part and are dark green above and paler below." (*Proc. Royal Hort. Soc., vol. 40, p. 130, 1915.*)

40842. Phyllostachys sp. Poaceæ. **Bamboo.**

From Burroughs, Ga. Plants secured by Mr. Edward Simmonds, through Mr. S. B. Dayton, Savannah, Ga. Received June 5, 1915.

"From J. T. Smith's place, Burroughs, Ga. A bamboo reported to have been brought from India in 1890 and planted near Savannah, where it attains a height of at least 50 feet and a diameter of 3 inches." (*Dayton.*)

For an illustration of the Smith bamboo grove, see Plate VI.

40843. Passiflora alata Curtis. Passifloraceæ. **Passion fruit.**

From Honolulu, Hawaii. Presented by Mr. Garret P. Wilder. Received June 9, 1915.

"This is a strong, vigorous vine, very suitable for arbors and trellises. It is not commonly found in Hawaii; however, a very fine specimen of its kind is growing in Dr. St. D. G. Walter's garden in Honolulu. The leaves are oval to ovate, the petioles having two glands. The fragrant purple flowers are about 2 inches in diameter. The ovoid-pointed fruit has a tough, leathery shell, which, when green, is 6 striated, with white stripes; when quite ripe the fruit is a dull orange-yellow. The numerous seeds are imbedded in the juicy, scented pulp, which is aromatic and delicious. Propagation is by seed and by cuttings." (*G. P. Wilder, Fruits of the Hawaiian Islands.*)

40844 and 40845.

From Johannesburg, Union of South Africa. Presented by Mr. J. Burtt Davy, botanist, Agricultural Supply Association. Received June 7, 1915.

40844. CLEMATIS STANLEYI Hooker. Ranunculaceæ. **Clematis.**

"An erect, robust herb, 3 feet in height with biternate, silky, wedge-shaped leaves and large white to pink-purple flowers, 1 to 3 inches across." (*Davy.*)

40845. PROTEA sp. Proteaceæ.

40846 and 40847. PHASEOLUS LUNATUS L. Fabaceæ. **Madagascar butter bean.**

From Marseille, France. Presented by Dr. E. Heckel, Colonial Institute, through the American consul general. Received May 29, 1915.

40846. "Speckled with red." 40847. "White."

40848. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanic Station. Received June 22, 1915.

"Seeds of wild sorghum collected at Anse aux Pins, Mahe, Seychelles. The three species got mixed while drying." (*Dupont.*)

40849. MISANTECA TRIANDRA (Swartz) Mez. Lauraceæ.
(*Acrodiclidium jamaicense* Nees.)

From Miami, Fla. Presented by Mr. D. Sturrock. Received June 12, 1915.

"A tall ornamental and shade tree with flaky bark and dense lustrous foliage; leaves elliptic-oblong. Native of the Antilles. Does well in southern Florida." (*Sturrock.*)

"This species has the foliage of *M. capitata* with the inflorescence of *M. anacardioides*. It is referred both by Grisebach and by Meissner to *Acrodiclidium jamaicense*, as a broad-leaved variety, and is, indeed, very nearly allied to that species, which seems to connect the two genera, as the thick stamens are more or less united at the base, though free at the summit. It has, however, the large glands at the base of the stamens of *Acrodiclidium*, although no staminodia as in most Misanteca." (*Hooker, Icones Plantarum, vol. 3, p. 47.*)

40850. LITCHI CHINENSIS Sonner. Sapindaceæ. **Litchi.**
(*Nephelium litchi* Cambess.)

From Honolulu, Hawaii. Purchased from Mr. J. E. Higgins, horticulturist, Hawaii Experiment Station. Received June 24, 1915.

See S. P. I. Nos. 36042, 36066, and 38779 for previous introductions and description.

40851. PHYLLOSTACHYS sp. Poaceæ. **Bamboo.**

From Savannah, Ga. Presented by Mr. S. B. Dayton. Received June 24, 1915.

This plant is supposed to be the same variety as S. P. I. No. 40842.

40852 and 40853.

From Guemes, Argentina. Presented by Mr. H. F. Schultz, director, Agricultural Experiment Station, through Mr. Eli Taylor, American vice consul, Buenos Aires, Argentina. Received June 21, 1915. Quoted notes by Mr. Schultz.

40852. PASSIFLORA EDULIS Sims. Passifloraceæ. **Passion fruit.**

"I returned last night from a trip to Jujuy, where I found another variety of edible Passiflora, which, I think, is superior to the variety I mailed you before. The fruit is roundish, smooth, and of a very attractive yellow color, of a rather pale shade, and not unlike a *Yellow Richard* apple. The fruit is slightly larger than S. P. I. No. 40075, measuring about 7 to 8 cm. in diameter. The pulp is bluish purple in color and, in my opinion, a little more spicy than the other variety. The proprietor, however, claims that S. P. I. No. 40075 is a better fruit, which proves again that 'de gustibus non est disputandum.' The plants are very precocious and good, strong growers, for which reason they should be planted about 8 meters apart and be trained on four or five wires, a foot apart each, the upper one about 1.80 m. high. I do not know where the variety originally came from. A friend of the proprietor purchased some fruits in Covent Garden, London, and brought him the seeds. The price for the fruit there at that time was two pence each, while the fruits of the Queensland variety sold at three pence each."

40853. ZIZIPHUS MISTOL Griseb. Rhamnaceæ. **Mistol.**

"A small tree with spiny, tortuous branches; subrotund, coriaceous, minutely serrulate leaves; inconspicuous flowers; and small edible drupes with large stones. Introduced as a possible stock for the Chinese jujube and for comparison with the Brazilian *Jua* (*Ziziphus joazeiro*). Found throughout northern Argentina as far south as the Province of Cordova."

40854 to 40873.

From China. Purchased from Dr. Camillo Schneider, Arnold Arboretum, Jamaica Plain, Mass. Received June 14, 1915. Quoted notes by Dr. Schneider, except as otherwise indicated.

40854 and 40855. (Undetermined.) Lauraceæ.

40854. "(No. 422.) From Talifu, Yunnan, China. Cultivated and grows wild, shrub 3 to 5 m., fruits ovate-elliptic, dark red. October, 1914."

40855. "(No. 422.) From Talifu, Yunnan, China."

40856. PUNICA GRANATUM L. Punicaceæ. **Pomegranate.**

"(A.) Cultivated. From Talifu, Yunnan, China."

40857. PRIMULA LITTONIANA G. Forrest. Primulaceæ. **Primrose.**

"(No. 609.) From Talifu, Yunnan, China."

"*P. littoniana*, though by no means the most beautiful of the new hardy Chinese primulas, has an altogether unique character that is bound to carry it into a permanent place in the heart of the primrose lover. The small lilac blossoms, as well as the lilac leaves, are somewhat like those of *P. denticulata*, but here resemblance ceases. Instead of the usual primula umbel, the scape terminates in a long flower spike, set thickly with bloom. The calyces are a rich maroon and the remarkable

40854 to 40873—Continued. (Quoted notes by Dr. C. Schneider.)

effect comes when these form a point above a sort of ruff of the lilac blossoms. Small wonder that it fairly dazzled George Forrest, the collector, when he found it massed naturally in the high mountains of China. There the flower stalks sometimes rise to a height of 2½ feet." (*H. S. Adams, Garden Magazine, May, 1914.*)

40858 and 40859. CUCURBITA PEPO L. Cucurbitaceæ. **Pumpkin.**

40858. "(No. 448.) From Talifu, Yunnan, China. Cultivated. Fruits large, round; yellowish red when ripe. October, 1914."

40859. "(No. 449.) From Talifu, Yunnan, China. Cultivated. Fruits large; yellowish red when ripe."

40860. LAGENARIA VULGARIS Ser. Cucurbitaceæ. **Calabash gourd.**

"(No. 450.) Cultivated cucurbit. Fruit green and pale yellow."

40861. CUCURBITA PEPO L. Cucurbitaceæ. **Pumpkin.**

"(No. 452.) From Talifu, Yunnan, China. Cultivated. Fruits large; yellowish red when ripe."

40862. VITIS sp. Vitaceæ.

"(NC.) From Talifu, Yunnan, China."

Introduced as a small-fruited kaki, but evidently there is some mistake.

40863. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

"(B.) From Talifu, Yunnan, China. The common form, cultivated."

40864. AMYGDALUS sp. Amygdalaceæ. **Wild peach.**

"(No. 549.) From Likiang, China. Semiwild and planted. September, 1914. Fruits yellowish."

40865 to 40871. PYRUS sp. Malaceæ. **Pear.**

40865. "(D.) From Talifu, Yunnan, China. Cultivated pear, Talifu market, October, 1914. Yellow with brown points, 7 cm. long by 8 cm. broad. All these seeds from 50 fruits."

40866. "(E.) Cultivated pear, Talifu market, October, 1914. Yellowish brown, sun side red, 7 cm. long by 7 cm. broad. Seeds from more than 50 fruits."

40867. "(F.) From Talifu, Yunnan, China. Cultivated pear, similar to S. P. I. No. 40865 but thicker, 6.5 cm. long by 10 cm. broad."

40868. "(G.) Cultivated pear, Talifu market, October, 1914. Yellow with red (sun side), numerous fine dark points, 5.5 cm. long by 8 cm. broad."

40869. "(H.) Cultivated pear, Talifu market, October, 1914. Leather-colored, light points, 7 cm. long by 8.5 cm. broad."

40870. "(K.) Cultivated pear, Talifu market, October, 1914. Yellow and red, fine points, 7 cm. long by 9 cm. broad."

40871. "(L.) Cultivated pear, Talifu market, October, 1914. Yellow, fine points difficult to see, 8 cm. long by 12 cm. broad."

40872. MIRABILIS JALAPA L. Nyctaginaceæ. **Marvel of Peru.**

"(No. 399.) From Talifu, Yunnan, China, October, 1914."

See S. P. I. Nos. 24033 to 24044 for previous introductions.

40873. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor bean.**

"(No. 537.) Talifu, Yunnan, China. October, 1914."

40874. CLAUCENA LANSIUM (Lour.) Skeels. Rutaceæ. Wampi.
(*Clausena wampi* Oliver.)

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Hawaii Experiment Station. Received June 28, 1915.

See S. P. I. Nos. 38708 and 39568 for previous introductions and description.

40875 and 40876. LATHYRUS spp. Fabaceæ.

From Buenos Aires, Argentina. Presented by Mr. Benito J. Carrasco, director general, Botanic Gardens. Received June 28, 1915.

40875. LATHYRUS MAGELLANICUS Lam.

"Usually perennial. Stem 3 to 5 feet long, smooth, angled, somewhat branched; leaflets ovate or oblong-linear; tendrils branched; stipules cordate-sagittate, broad; peduncles long, 3 to 4 flowered, flowers dark purple-blue. A strong-growing, woody, almost evergreen species covered with a bluish bloom. Since it is a maritime plant, salt is said to assist its growth. It is sometimes regarded as an annual." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1826.*)

40876. LATHYRUS NERVOSUS Lam.

"Glabrous plants with stems about 1 foot long. The leaves are composed of two nearly sessile, large, oval, acute leaflets having conspicuous reticulate nerves. Tendrils trifid. Stipules large, sagittate, nerved, somewhat shorter than the leaves. Peduncles solitary, 2 inches long, bearing 5 to 7 purple flowers." (*Lamarck, Encyclopedia, vol. 2, p. 708.*)

40877 and 40878. ZIZIPHUS JUJUBA Miller. Rhamnaceæ.
(*Ziziphus sativa* Gaertn.) **Jujube.**

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 11, 1915. Quoted notes by Mr. Meyer.

40877. "(No. 120b. From Pinchow, Shensi, China. January 20, 1915.) A very good quality of jujube, having large and heavy fruits of elongated shape; considered to be the second best in China, the *Ta yüan tsao* of Paihsiangchen, Shansi, coming first. Chinese name *Chin tsao* and *Fei tsao*, meaning 'Golden jujube' and 'Fat jujube.' Scions sent under No. 1252 [S. P. I. No. 40506]."

40878. "(No. 121b. From Lingpao, Honan, China. January 31, 1915.) A medium-large variety of jujube, of round-flattened shape and of brown-red color. Meat sweet, but of loose texture; much used baked in bread and boiled with millet. Chinese name *Ta hung tsao*, meaning 'large red jujube.' Apparently the same as sample 77b, of which scions were sent under No. 1058 [S. P. I. No. 37476]."

40879. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*Triticum vulgare* Vill.)

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Acting Director of Agriculture. Received June 11, 1915.

"*Spanish Zarraceno* or *Candeal*. Grown in Cagayan Province. Introduced into the Philippines 50 years ago. Is planted at end of rainy season; is grown on high lands and matures in 90 days." (*Hernandez.*)

See S. P. I. No. 39152 for previous introduction.

40880. ZINZIBER OFFICINALE Rosc. Zinziberaceæ. Ginger.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received June 30, 1915.

"(No. 1256. Peking, China. May 6, 1915.) A variety of wet-land ginger, said to come from southern China, retailing in Peking at 10 cents (Mexican silver) per catty of 16 ounces. Much used shredded in various diseases as a condiment." (*Meyer.*)

Rhizomes.

40881. ACROCOMIA FUSIFORMIS (Swartz) Sweet. Phœnicaceæ.

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station. Received June 28, 1915.

"*Macaw tree* of Jamaica, *Corozo de Jamaica* of Cuba. Trunk 10 to 30 feet high, fusiform or swollen above the middle, armed with spines in rings. Leaves pinnate, petioles and rachis densely armed. Inflorescence inclosed in two spathes, inner complete, sparingly armed. Peduncles also armed with long black spines. Fruit depressed globose, about 1 inch in diameter, smooth. Seed very hard, 1 celled, foramina lateral. A remarkably strong fiber called *pita de corozo* is extracted from the rachis of the leaves of this palm and is used in Cuba in the manufacture of brushes." (*C. B. Doyle.*)

Erroneously referred to *Acrocomia lasiospatha* by Martius and Grisebach.

40882 to 40885. ORYZA SATIVA L. Poaceæ. Rice.

From Athens, Greece. Presented by the Société Royale D'Agriculture Hellénique. Received June 16, 1915.

40882. "*Ostylia.* Thessalian Lazarina rice."

40883. "*Beloca.* Thessalian Lazarina rice."

40884. "No. 43. Seed of Macedonia Edessa rice."

40885. "No. 44. Seed of Macedonia Edessa rice."

40886 to 40889.

From Calcutta, India. Presented by Mr. William Bembower, Collins, Ohio. Received June 25, 1915.

40886. BAMBOS TULDA Roxb. Poaceæ. **Bamboo.**

"The common bamboo of Bengal, where it grows in great abundance everywhere, flowering in May. Not uncommon in the deciduous forests of Pegu, generally occupying lower and moister stretches of ground in company with *tinwa*, *Cephalostachyum pergracile*, the dry hills surrounding being covered with *Dendrocalamus strictus*." (*Brandis.*)

"An evergreen or deciduous, cæspitose, arboreous, gregarious bamboo. Culms green or glabrous when young, gray-green when older, sometimes streaked with yellow, 20 to 70 feet high, not or little branched below; 2 to 4 inches in diameter; nodes not swollen, the lower ones fibrous rooted; internodes 1 to 2 feet long, white scurfy when very young, ringed with white below the nodes, the walls thin, 0.3 to 0.5 inch; branches many from nearly all nodes, those of lowest ones thin, nearly leafless, horizontal." (*J. S. Gamble, Bambuseæ of British India.* In *Annals of the Calcutta Museum, vol. 7, p. 30.*)

See S. P. I. Nos. 19269 and 21002 for previous introductions and description.

40886 to 40889—Continued.

40887. CEPHALOSTACHYUM PERGRACILE Munro. Poaceæ. **Bamboo.**

"A deciduous arboreous, tufted bamboo, with glaucous-green culms 30 to 40 feet high, 2 to 3 inches in diameter, and rather thin walled, the walls usually about one-half inch thick. It is one of the chief bamboos of Burma and one of those most frequently found in association with teak." (*Brandis.*)

"This beautiful species is probably the most common of all Burmese bamboos except *Dendrocalamus strictus*, and, as I am informed by J. W. Oliver, it may be found almost any year flowering sporadically like *D. strictus* and *D. hamiltonii*, but not generally producing good seed on such occasions. The Kolhan and Assam localities would point to its having a wider range than is generally supposed. The culms are largely used for building and mat making and other purposes, and in Burma the joints are used for boiling kauknyin or glutinous rice, the effect being to make a long mold of boiled rice which can be carried about to be eaten on journeys. It is at once recognized by the characteristic inflorescence, the short sheaths with rounded, long-fringed auricles, and long bifidly mucronate palea." (*J. S. Gamble, Bambuseæ of British India.* In *Annals of the Calcutta Museum, vol. 7, p. 109.*)

See S. P. I. Nos. 21236 and 21943 for previous introductions and description.

40888. DENDROCALAMUS HAMILTONII Nees and Arnott. Poaceæ. **Bamboo.**

"A common bamboo in the eastern Himalayas from Kumaon to Assam. It is generally a tall grass 40 to 60 feet in height, but sometimes found as a long and tangled bush. The young shoots are used as food, being boiled and eaten in Sikkim, Bhutan, and Assam. The haulms are large, 3 to 6 inches in diameter, rather hollow, and not always straight, but they are used for every variety of purpose." (*Brandis.*)

"This is the common bamboo of the Darjiling Hills and Terai, of the Duars and the Assam Valley, and is in universal employment for building and basket and mat work, though as a building bamboo its comparative softness and thin walls make it inferior to such species as *B. tulda* and *balcooa*. The young shoots are eaten as a vegetable. The inner layer of the culm sheath is used for covering Burmese cigarettes. This bamboo flowers usually sporadically, so that clumps in flower may almost always be found, and consequently it has been largely and often collected; at the same time, like other species, it sometimes flowers gregariously, as it is doing this year (1894) both in Sikkim and in Dehra Dun. Of its straggling habit, so noticeable in the forests of Bengal and Burma, but curiously much less so in the Dun, J. W. Oliver remarks, 'When they have no trees to support them the main stems bend over, forming impenetrable thickets, and the lateral branches ascend vertically, often forming shoots nearly as long as the main stems.' This species is very easily identified by its panicle of bright purple-red flowers; and when out of flower the gray stems, long, nearly glabrous stem sheaths, and straggling habit cause it to be easily recognized. The long, hairy points to the anthers are also remarkable." (*J. S. Gamble, Bambuseæ of British India.* In *Annals of the Calcutta Museum, vol. 7, p. 85.*)

See S. P. I. Nos. 38736 and 39178 for previous introductions.

40886 to 40889—Continued.

40889. Dendrocalamus strictus (Roxb.) Nees. Poaceæ. **Bamboo.**

"A very useful and strong bamboo of India, formerly used universally for spear staffs. The plant flowers frequently and does not die down after flowering, as is the case with so many bamboos. The culms are said sometimes to reach a height of 100 feet." (*Brandis.*)

"This is the most common and most widely spread and most universally used of the Indian bamboos, and is commonly known as the 'male bamboo.' Its culms are employed by the natives for all purposes of building and furniture, for mats, baskets, sticks, and other purposes. It furnishes, when solid culms are procurable, the best material for lance shafts. In Burma, when large culms are obtainable, they are much in request for masts for native boats. It flowers gregariously over large areas, as it did in the Central Provinces in 1865, but it may be found flowering sporadically, a few clumps at a time, almost every year, in any locality, and such clumps then usually die off. These flowerings. however, do not produce as much good seed as when the gregarious flowering takes place. The flowers appear in the cold season between November and April, the seed ripening in June. The leaves fall in February or March, and the young new ones appear in April. The young culms are rather late, usually beginning to appear in July some time after the rains begin." (*J. S. Gamble, Bambuseæ of British India.* In *Annals of the Calcutta Museum, vol. 7, p. 79.*)

See S. P. I. Nos. 21548, 23476, and 37223 for previous introductions.

40890 and 40891. Diaspyros spp. Diospyraceæ.

From Lal Bagh, Bangalore, India. Presented by Mr. William Bembower, Collins, Ohio. Received June 25, 1915.

40890. Diospyros sp.

Received as *Diospyros embryopteris*, for which we are using the name *Diospyros peregrina*, with which the seeds do not agree.

40891. Diospyros montana Roxb.

"A deciduous and small erect tree, growing to a height of about 30 feet. Is quite ornamental and useful where small trees are desirable." (*Bembower.*)

See S. P. I. Nos. 31644, 32799, and 35084 for previous introductions and descriptions.

40892. Dioscorea aculeata L. Dioscoreaceæ.

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Tubers received June 2, 1915.

"No. 19–1017. *Tugue.* Flesh white and mealy, but firm and a little fibrous; sweetish. The quality is not equal to that of the *Yampi* of Jamaica." (*R. A. Young.*)

40893. Citrus grandis (L.) Osbeck. Rutaceæ. **Pummelo.**

From Nagasaki, Japan. Collected by Mr. W. T. Swingle, of the Bureau of Plant Industry. Received by the Office of Crop Physiology and Breeding Investigations, June 26, 1915.

"I found at Nagasaki Experiment Station a most excellent pummelo, the *Hirado Buntan*, better than the Hongkong pummelo, though not seedless. I send seeds from a choice fruit given me at the experiment station May 23. The pith of the fruit is small and solid, the color like a good grapefruit." (Extract from *letter from W. T. Swingle, dated "Off Shanghai, China, May 25, 1915."*)

40894 and 40895. CRACCA spp. Fabaceæ.

From Peradeniya, Ceylon. Presented by Mr. H. F. Macmillan, superintendent, Royal Botanic Gardens. Received June 29, 1915.

40894. CRACCA CANDIDA (DC.) Kuntze.
(*Tephrosia candida* DC.)

"Well known in the East as *Boga-medelloa.* This grows rapidly and attains a height of 8 to 10 feet or more. It is a favorite plant for planting among crops for green manuring and is probably the best for the purpose in tropical latitudes." (*Macmillan.*)

40895. CRACCA VILLOSA PURPUREA (L.) Kuntze. **Kavalai.**
(*Tephrosia purpurea* Pers.)

"A perennial herb, 1 or 2 feet high, with few-flowered racemes of purplish pink flowers, used in the low country of Ceylon as a green manure and in the dry regions as a mulch and sand binder. A decoction of the bitter root is used by the Hindoos for dyspepsia, diarrhea, and flatulence. (Adapted from *Macmillan, Handbook of Tropical Gardening,* and *Lanessan, Les Plantes Utiles.*)

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Issued July 26, 1918

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED
BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1915.

(No. 44; Nos. 40896 TO 41314.)

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INTRODUCTORY STATEMENT.

This inventory covers the period between July 1 and September 30, 1915, and describes 419 introductions, the major part of which have been secured by correspondence.

There is, however, one notable collection, made by Mr. O. F. Cook in the Peruvian Andes, where he was sent as a representative of the Department of Agriculture on the Yale-National Geographic Society Peruvian Expedition to find out the character of the agriculture of the peoples who produced such remarkable terraced hillsides as those in the region back of Cuzco. (See National Geographic Magazine, vol. 29, pp. 474–534, May, 1916.) Mr. Cook's collections furnish striking evidence of the antiquity of these peoples, through the variety and character of their food plants, in particular their highly developed root crops, some of which appear to be nearly as important to the present inhabitants of this mountain region as does the potato itself. The great variety in shape and color of the potato, which is a staple crop there, and the distinctive names by which these many forms are known are further evidence of the age of the civilization through which this most remarkable of all food vegetables was introduced into universal cultivation. The immense value of this one Peruvian tuber, which has met with such success throughout the world, should encourage us to look more closely at the other root crops which were developed probably by the same people who developed the potato. Mr. Cook's collections will assist us in doing this and in discovering the regions in this country sufficiently similar climatically to that of the high Peruvian altitudes where these crops are grown to make it possible to establish these new root crops in America. Our high altitudes are unfortunately much warmer than the Peruvian in summer and incomparably colder in winter. Mr. Cook believes that the cool coastal climate of southern California ap-

NOTE.—This bulletin is intended for distribution to the agricultural experiment stations and the more important private cooperators of the Department of Agriculture.

proaches most nearly that of the Peruvian region of any in the United States. Of the collections listed in this inventory, the following deserve special mention here:

A cultivated variety of *Canna edulis* (Nos. 41100 and 41187) with green and white tubers and scarlet flowers, which deserves trial as a crop for the production of arrowroot; a wild strawberry (No. 41102) from an altitude of 8,000 feet, near Tocontoy, in which strawberry breeders may be interested; two species of Escallonia (Nos. 41105 and 41112), ornamental trees likely to thrive on the Pacific coast; a large tree species of Solanum, which in winter, when frosts are of almost nightly occurrence, produces large clusters of attractive pendent bell-shaped flowers, yellowish outside and rich violet within (No. 41106); an undescribed species of Eugenia, forming an extremely beautiful tree with fine glossy foliage contrasting with its light-colored, graceful trunk and branches (No. 41110); a handsome species of Malaceæ (Hesperomeles) having hollylike evergreen foliage and clusters of red berries (No. 41111); the Quita naranjo, a shrub bearing clusters of white flowers followed by orange-yellow fruits, which give it a remarkable resemblance to the orange tree and may make it valuable as an outdoor shrub and for greenhouse use as well (No. 41113); a shrub of the genus Solanum, producing clusters of attractive blue flowers, which it holds throughout the winter, even in dry exposed places where frosts occur every night (No. 41117).

The three varieties of Manihot which Mr. Cook has secured from the high altitudes (3,000 to 6,000 feet) in Peru and from the temperate region of Lima may prove so early maturing as to be of commercial importance in Mississippi and Louisiana, where the varieties that require a longer season are generally unsuccessful (Nos. 41103, 41121, and 41122).

The oca (*Oxalis tuberosa*, Nos. 41168 to 41176) is a tuber-bearing crop which in some districts of Peru stands second only to the potato in economic importance. There are many varieties of it, and it is eaten raw, cooked, or after being frozen and dried. It might become popular for salads or pickles, and, since its native habitat indicates that it may prove adapted to acid soils, it may possess certain distinct advantages for cultivation on soils not now occupied by any crop in this country.

The ullucu (*Ullucus tuberosus*, Nos. 41177 to 41184) is another tuber-bearing plant which is grown in the highlands of Peru and Bolivia and is represented by many varieties and is employed extensively in soups. It is a relative of the well-known Madeira vine, but the cultivated varieties do not grow so rankly as this species, resembling more in habit the sweet-potato vine.

Still another Andean tuber is the anyu (*Tropaeolum tuberosum*, Nos. 41185, 41186, and 41195), which is inferior to those already mentioned, according to Mr. Cook, but has very remarkable keeping qualities, tubers of it remaining fresh after an exposure of more than six months to room temperatures. Mr. Cook suggests that it might be hybridized with the flowering nasturtiums of our gardens and produce new varieties which could be perpetuated by tubers.

The fourth root crop described by Mr. Cook is the llacono (*Polymnia sonchifolia*, No. 41188), which belongs to the sunflower family and produces tubers resembling sweet potatoes in shape, but tasting like the Jerusalem artichoke.

Although Peru is recognized generally as the home of the potato, it is doubtful whether even the American breeders have known the extent to which the potato has been developed by the inhabitants of the Andes. Mr. Cook's collection of 47 varieties (Nos. 41197 to 41243), each with a distinctive native name, gives some indication of the development which has taken place in the home of the potato.

Of material received from Mr. Frank N. Meyer, who was exploring in the region south of Shanghai, little is described in this inventory. The most interesting appears to be a variety of the nagi (*Myrica rubra*, No. 41256), which bears fruits as large as crab apples, of a dark-purple color, extremely attractive appearance, and fine flavor. Mr. Meyer's investigations near Hangchow, China, show that this species of fruit tree exists in numerous varieties and constitutes a new crop which deserves to be tested on well-drained soils in our Gulf States.

Mr. Wilson Popenoe, during a brief visit to Cuba, studied the Cuban varieties of the mango and avocado and sent in what from his experience with Florida and California conditions he believes to be the most promising Cuban varieties of these fruits (Nos. 40911, 40912, 40920, 40921, and 40978 to 40982). He recommends as a new ornamental tree and for trial as a stock for the mango the nariz (*Anacardium excelsum*, No. 40987).

The newly aroused interest in the chayote (*Chayota edulis*) makes the collection of six selected varieties from San Jose, Costa Rica (Nos. 41135 to 41140), of unusual importance, and Mr. Wercklé's remark that over 100 pounds of the edible roots are dug from a single plant of certain green-fruited varieties calls attention to a portion of the plant which has not yet been utilized by us.

The time may not have arrived when plantations of tropical forest trees grown for their timber will be a paying proposition, but when it does the ucuúba (*Virola surinamensis*, No. 41255), which the veteran student of tropical agriculture, the late Doctor Huber, considered the most useful tree of the Amazon region, will come in for consideration. Its easily worked, moderately hard wood, as also its seeds, which furnish a kind of vegetable wax rich in stearin, may make it eligible for plantation purposes.

Bambos tulda, a species of Burmese bamboo, which was introduced in 1907 from the Royal Botanic Garden, Sibpur, Calcutta (No. 21002), has been so successful both in the Canal Zone and in Porto Rico that the introduction by Dr. Proschowsky of what appears to be a hardier variety of this species from the Riviera (*Bambos tulda longispiculata*, No. 40936) is of unusual interest. No bamboo yet introduced has produced a quality of wood so suitable for split-bamboo fishing rods and talking-machine needles as the tulda, and there appears to be a strong demand for its culms.

The Para grass and Carib grass, both remarkable rank-growing foliage grasses from the Tropics, have grown successfully in southern Texas and in the Everglades and are yielding forage for cattle-raising purposes there; and the molasses grass (*Melinis minutiflora*, No. 41148), sent in by Mr. T. R. Day, of Macuco, Brazil, may succeed equally well and will at least be interesting to test in comparison with them.

Whether the elephant grass (*Saccharum ciliare*, No. 40989), which covers large areas in the Punjab, British India, and is frequently planted in lines or dividing hedges in low-lying places subject to periodic inundation, can be utilized in this country is a question worthy of investigation.

Mr. I. B. Pole Evans has sent in from British East Africa a grass (*Pennisetum longistylum*, No. 41055) which cattle eat greedily and which he reports to be one of the most promising in the country. Rhodes grass and Sudan grass have both been such distinctly profitable introductions from this general region that this new introduction will be watched with unusual interest.

Chinese names in this inventory have been brought, as far as possible, into accord with the best authorities, the geographic names (except when fixed by decisions of the United States Geographic Board) being given in the form accepted by the Chinese Ministry of Communications Postal Guide. Many of the names of the smaller villages, however, are not listed therein, and in all such cases the location of the village is given with reference to the nearest town mentioned in that work.

This inventory has been prepared by Miss May Riley and the botanical determinations of seeds introduced made by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine under the supervision of Mr. S. C. Stuntz, in charge of all the publications of this office.

David Fairchild,
Agricultural Explorer in Charge.

Office of Foreign Seed and Plant Introduction,
Washington, D. C., April 9, 1917.

INVENTORY.

40896. CYMBOPOGON COLORATUS (Hook.) Stapf. Poaceæ. **Lemon grass.**

From Suva, Fiji Islands. Presented by Mr. C. H. Knowles, Superintendent of Agriculture, Nasinu Experiment Station. Plants received July 8, 1915.

"This grass, which furnishes the lemon-grass oil of commerce, is growing well on sloping ground, the soil of which is brownish red, not very good in quality. The ground was first ploughed and harrowed, and young plants from a seed bed set out at distances of 3 feet. The space between the young plants was kept clean by weeding, and the plants soon grew and covered the ground. Plants may be set out any time during wet weather, but from September to December is best. Under normal conditions the grass flowers about April or May, when about 4 feet high. After the grass has been cut it flowers irregularly during the year. The best time to cut appears to be when the grass is from 3 to 4 feet high, but before it is heavily in flower. Subsequent cuttings may be made whenever the grass is over 3 feet high. Two cuttings may be depended on, while three may be made unless dry weather sets in for some time. The young grass is richer in oil than the older grass, but the total yield per acre obtained in the same time is less." (Extract from *Bulletin No. 6, Fiji Department of Agriculture, Notes on a Lemon Grass from Fiji.* See this bulletin for further information.)

40897. HOLCUS SORGHUM VERTICILLIFLORUS (Steud.) Hitchcock. Poaceæ. **Sorghum.**

From Reduit, Mauritius. Presented by Mr. F. A. Stockdale, Director of Agriculture, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received July 6, 1915.

40898 to 40903.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received July 2, 1915. Quoted notes by Mr. Meyer.

40898. ULMUS PUMILA L. Ulmaceæ. **Elm.**

"(No. 2297a. Peking, China, May 14, 1915.) Seed of the common North China elm, which has proved itself to be adapted as an ornamental tree over a very extended territory in the United States. Introduced previously under S. P. I. No. 22975, which number see for further information."

40899. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

"(No. 2298a. Peking, China, May 5, 1915.) Seeds of a small-fruited variety of cultivated jujube, containing a large percentage of seeds with plump kernels. To be raised primarily as stocks for improved varieties. Purchased in the Peking market."

40898 to 40903—Continued. (Quoted notes by Mr. F. N. Meyer.)

40900. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"(No. 2300a. Peking, China, May 19, 1915.) A small-seeded variety of peach, said to be grown in the Western Hills near Peking. To be tested as a stock and experimented with in localities north of the peach belt proper. May possibly be a very hardy sort. Purchased in the Peking market."

40901 and 40902. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ.
(*Dolichos sesquipedalis* L.) **Asparagus bean.**

40901. "(No. 2301a. Peking, China, May 18, 1915.) A variety of yard-long bean, said to be unusually elongated; much used as a garden vegetable either fresh, dried, salted, or pickled. Needs support and a rich, yet light, soil to give maximum returns. Chinese name *Ch'ang ch'ing chiang tou* or *Shih pa tou*, meaning 'Long green yard bean' or 'Eighteen-in-a-pod bean.'"

40902. "(No. 2302a. Peking, China, May 18, 1915.) A variety of yard-long bean, said to be rather short and more prolific than the preceding number. [S. P. I. No. 40901.] Used in similar ways. Chinese name *Tuan ch'ing chiang tou*, meaning 'Short green yard bean.'"

40903. DOLICHOS LABLAB L. Fabaceæ. **Hyacinth bean.**

"(No. 2303a. Peking, China, May 10, 1915.) A brown-seeded variety of hyacinth bean, much used by the Chinese as a vegetable, preferably sliced green and only slightly cooked. These hyacinth beans are much grown as a home vegetable along fences of kaoliang stems and even in between maize. They are also quite decorative. Chinese name *Ch'ing pien tou*, meaning 'Green flat bean.'"

40904. RUBUS CANADENSIS L. Rosaceæ. **Blackberry.**

From West Virginia. Collected by Mr. A. B. Brooks, forester, West Virginia Agricultural Experiment Station, Morgantown. Received July 9, 1915.

"Collected on the northern end of Back Fork Mountain, in Randolph County, at an altitude of a little over 3,500 feet. I searched on Point Mountain where Dr. Millspaugh reports finding this species, but found none that seemed to me typical. I wish to state that my observations on this trip tend to strengthen what I have believed for some time, namely, that this species varies greatly as to some of its characters, due to conditions under which it grows. For example, I found to-day hundreds of acres overgrown with this blackberry, some of the plants growing in rich north exposures and in shady places, while others grow on open sunny flats and southern exposures and on poor ground. Invariably the plants growing in the rich soil and in the shade are found to be unarmed for the most part and very tall and thrifty, of course, while those in the sunny, poor soil are found to be stunted and with a rather good supply of prickles (these I have been calling *Rubus canadensis*). So when I go to look for *R. millspaughii* I am somewhat at a loss. The specimens sent grew in a shady place." (*Brooks.*)

Collected as *Rubus millspaughii*, now recognized as a synonym of *R. canadensis.*

40905. Aleurites fordii Hemsley. Euphorbiaceæ. Tung tree.

From Auburn, Ala. Presented by Mr. Ernest Walker, horticulturist, Alabama Agricultural Experiment Station. Received July 6, 1915.

Seed from the crop of 1914 produced by trees sent to the experiment station under S. P. I. No. 21013

40906 to 40909.

From Cuzco, Peru. Presented by Dr. A. A. Giesecke, president, University of Cuzco. Received July 8, 1915.

40906. Lucuma sp. Sapotaceæ.

40907. Amygdalus persica L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

40908. Annona cherimola Miller. Annonaceæ. **Cherimoya.**

40909. Prunus domestica L. Amygdalaceæ. **Plum.**

40910. Medicago sativa L. Fabaceæ. Alfalfa.

From Changchun, Manchuria. Presented by Dr. R. J. Gordon, Irish Presbyterian Mission. Received July 8, 1915.

40911 to 40913.

From Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received July 16, 1915. Quoted notes by Mr. Popenoe.

40911. Mangifera indica L. Anacardiaceæ. **Luisa mango.**

"(Jovellanos, Matanzas Province, Cuba, July 11, 1915.) *Luisa* mango. A seedling of the Philippine race. The parent tree, from which this bud wood was taken, is growing in the garden at the Casa Vivienda, on the Nueva Luisa sugar estate. My attention was directed to it last year by Prof. F. S. Earle, who considers it the best Philippine variety which he has seen in Cuba. *Luisa* is a typical Philippine mango, long, slender, and pointed at the apex, varying somewhat in form and size. A good specimen will weigh 8 or 10 ounces. The color is lemon yellow, as in others of the type. The fruits are not yet ripe, so I have not had an opportunity to test the quality, but according to Prof. Earle it is excellent. The tree is not fruiting heavily this season, there being only a few clusters close to the ground and about a dozen close to the top of the tree. Seedlings of the Philippine race are frequently rather unproductive, although the fruits are produced in clusters of two or three to about ten, and in a good season an enormous crop may be produced. Because of its excellent flavor and quality, this variety should be given a trial at Miami, Fla., but it will be well to observe its fruiting habits for a few years before distributing it to any extent."

Cuttings.

40912. Persea americana Miller. Lauraceæ. **Luisa avocado.**
(*Persea gratissima* Gaertn. f.)

"(Jovellanos, Matanzas Province, Cuba, July 11, 1915.) *Luisa* avocado. The parent tree of this variety is growing in the garden at Casa Vivienda, on the Nueva Luisa sugar estate. It is a large seedling, apparently 25 years old at least. Its particular value lies in the fact that the fruit is said to ripen in October, after nearly all the other avocados are gone. The fruits, which are only about 3 inches long at present, are broadly obovate in form, with no indication of a neck, the skin light green when

40911 to 40913—Con. (Quoted notes by Mr. Wilson Popenoe.)

ripe and very thick. Judging from the immature fruit, the seed cavity is not large and the seed fits in it snugly. According to the gardener who was in charge of the place, the fruit is of excellent quality, with a rich flavor and no fiber. The tree, which stands among a lot of others beside a small stream which trickles through the garden, is bearing a good crop of fruit. The only late avocado at present grown commercially in southern Florida is the *Trapp*. It seems well worth while to try other varieties which ripen late in the season, and *Luisa* has been obtained with this in view. The season is earlier here than in Florida, generally speaking, and an avocado which ripens here in October may hang on the tree in Florida until even later than this, because of the cool autumn weather. To be given special attention, as it may be of considerable importance."

Cuttings.

40913. Moringa oleifera Lamarck. Moringaceæ.

"*Palo blanco.* A small ornamental tree which is planted in the gardens of this region. As commonly seen here, it is a tree of about 15 or 20 feet in height, erect, and of very attractive appearance. The leaves are pinnately compound, often nearly a foot in length, of pleasing light-green color, with opposite, shortly petiolulate obovate-elliptic leaflets rarely over half an inch long. The flowers are borne in axillary panicles 6 to 8 inches long; they are white, about an inch long, and faintly fragrant. As they are produced in great abundance, they make the tree effective as an ornamental. The slender triangular seed pods are often a foot in length; when ripe they dehisce and scatter the ground with seeds. *Palo blanco* is considered to be an antidote for manchineel poisoning. As an ornamental it seems worthy of trial in southern Florida, and possibly also in southern California, in regions protected from severe frosts."

40914. Holcus sorghum L. Poaceæ. **Sorghum.**

(*Sorghum vulgare* Pers.)

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received July 13, 1915.

"Collected in Natal, near Pietermaritzburg. In forwarding this grass seed to you, I think it only right that I should point out that this grass in South Africa is highly susceptible to the rust *Puccinia purpurea* Cooke, and also to a new smut which I am describing in a paper to be read at the meeting of the South African Association for the Advancement of Science, which meets in Pretoria next month, and have named it *Sorosporium simii* Pole Evans. In view of the importance of Sudan grass in America, I think it highly probable that this smut which occurs on *Sorghum halepensis* will also attack your Sudan grass." (*Evans.*)

40915. Litchi chinensis Sonnerat. Sapindaceæ. **Litchi.**

(*Nephelium litchi* Cambess.)

From Canton, China. Presented by Mr. G. Weidman Groff, Canton Christian College, through Mr. F. E. Shamel. Received July 19, 1915.

"*Haak-ip* (*Hei yeh*) litchi. The litchi seems to do best in about this latitude. It succeeds somewhat north and south of this, but I should say can not stand much frost. We have a light frost here almost every year, but not heavy enough to do much damage. The litchi seems to do best on dikes of low land where its roots can always secure all the water needed and where they are even subject to submersion. In some places they grow it on high land, but not nearly so successfully. I have never seen a budded or grafted litchi tree, and I understand budding and grafting are never done. Litchi trees are either inarched or layered, layering being the most common and the most successful. If inarched, it is on litchi stock. The common practice in inarching is to use the *Loh mai chih* [*No mi chih*] variety for scions and *Shan chi* variety for stock. The seeds of the various varieties vary greatly in vitality. I am told that there is absolutely no success with seedlings, though seeds of certain varieties germinate quite readily. This variety, the *Haak-ip*, is one of the most popular and is now on the market. The seed of this variety germinates quite readily, though not so well as the *Shan chi*." (*Groff.*)

40916. LITCHI CHINENSIS Sonnerat. Sapindaceæ. **Litchi.**
(*Nephelium litchi* Cambess.)

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Hawaii Agricultural Experiment Station. Received July 19, 1915.

"These litchis are about one month later than the first lot I sent you [S. P. I. No. 40850]. They are of a more delicate texture and flavor, but the flesh is thin in proportion to the seed. The tree has a poor chance, however, and under proper conditions might do better." (*Higgins.*)

40917. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Alamoen.**

From Paramaribo, Dutch Guiana. Presented by Dr. J. A. Samuels, who secured it from Mr. A. J. Bueno de Mesquita. Received July 16, 1915.

"This fruit, which is most likely the largest variety of citrus, is called *Guidieon-apple* in Surinam, or *Alomoes*, the Dutch name being *Pompalmoes*. It is not cultivated on a large scale, but is planted in the house gardens both in the city and the country. No attempt has been made at selection work to improve the quality, and the fruit is not used for industrial purposes." (*Samuels.*)

See S. P. I. No. 37804 for previous introduction and description.

40918. STIZOLOBIUM NIVEUM (Roxb.) Kuntze. **Tiger bean.**

From Changning, via Swatow, Kiangsi, China. Presented by Rev. C. E. Bousfield, American Baptist Mission. Received July 7, 1915.

"Tiger beans, something new to me, but very good to eat. We like them baked and, indeed, any way. The only difficulty is to get enough of them, for they are not common." (*Bousfield.*)

40919. TRITICUM DICOCCUM Schrank. Poaceæ. **Emmer.**

From Bombay, India. Presented by Mr. Selby S. Coleman, American vice consul, who secured it from Mr. Frank Harrison, Bombay.

Wild *Kathiawar* wheat. Determined by Mr. M. A. Carleton as an emmer.

See S. P. I. No. 39227 for previous introduction and description.

40920 and 40921. MANGIFERA INDICA L. Anacardiaceæ.
Mango.

From Cienfuegos, Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Cutting received July 19, 1915.

40920. "(Cienfuegos, Cuba, July 13, 1915.) *Manga mamey.* A fine seedling type, found only in the Quinta Aviles, so far as known. Its

40920 and 40921—Continued.

origin is uncertain, but its affinities seem to lie with the common *manga* group; hence the Cubans call it *manga mamey.* It is considered by many to be superior in flavor to *mango Chino*, but does not seem to be shipped to Havana in such quantities, possibly because there are fewer trees of this type in the Quinta. Like *Chino*, however, it is a true seedling type, polyembryonic, and apparently maintains the type characteristics when grown from seed. In general form it is broadly cordate, very short (just about as broad as long), slightly compressed laterally, the base flattened and very slightly oblique, the apex with a suggestion of a beak. In weight it averages 8 to 12 ounces. The stem is inserted in a shallow, narrow, almost regular cavity. The surface is smooth, greenish orange-yellow to orange-yellow in color, blushed around the base with reddish salmon. The dots are large and conspicuous, a distinguishing feature of the type, as frequently with other members of the *mango* group. The skin is thick and very tough, the flesh bright yellow-orange, meaty, moderately juicy, with very little aroma. The flavor is acid, pleasant, fairly spicy; fiber not very objectionable except around the ventral edge of seed, where it is long and fine. The seed is long, rather thick, with two to five embryos in the specimens examined, and an exceedingly hard, woody endocarp. In season this type agrees with *Chino*, being early to midseason in ripening. While somewhat more fibrous than the best Indian varieties grown in Florida, it is far above the average Cuban seedling in quality and freedom from fiber, and is here considered a very choice mango. The trees appear to be productive. For trial in southern Florida." (*Popenoe.*)

40921. "(Cienfuegos, Cuba, July 13, 1915.) *Mango Chino.* This is one of the largest and best seedling types in Cuba. As far as known it is found only in the Quinta Aviles, near Cienfuegos, where there are a number of old and large trees from which the Havana market, as well as local markets, are supplied. In Havana single fruits of this type bring 20 to 40 cents each. There appears to be very little difference among the fruits from the various trees of this type grown in the Quinta Aviles. As the trees are all seedlings, this constancy of the type characteristics proves that *Chino* is not merely a seedling variety, but a type which will doubtless reproduce its distinguishing characteristics when grown from seed. In general form *Chino* is broadly cordate, plump, usually somewhat oblique at the base and rounded at the apex. It weighs 10 to 16 ounces. The stem is inserted in a shallow, somewhat irregular, cavity. The surface is smooth, greenish yellow to dull cream yellow in color, overspread or blushed around the base with carmine. The skin is very thick and tough, making the fruit an excellent shipper. The flesh is deep yellow in color, orange-yellow toward the seed, of very firm and meaty texture, juicy, and with a very faint but pleasant aroma. The fiber is more abundant than in our best India varieties, but much less so than in the average Cuban seedling; it is long at the ventral edge of the seed, but comparatively short elsewhere. The flavor is rich, spicy, and very pleasant, the seed oval, rather thin and not objectionably large. It usually contains four to six embryos. *Chino* is rather early in season, and the trees seem to be productive. The origin of this type is not known; the man who planted the trees is now dead, and the caretaker

40920 and 40921—Continued.

at the Quinta, who has been there 35 years, says that the trees were nearly as large when he first came on the property as they are now. It is a very distinct type; nowhere have I seen one which seemed to be closely allied to it or resembled it in all details. It should be tried in southern Florida." (*Popenoe.*)

For an illustration of trees of these mangos, see Plate I.

40922 and 40923. ORYZA SATIVA L. Poaceæ. **Rice.**

From Constantinople, Turkey. Presented by Mr. G. Bie Ravndal, American consul general, through the American consul general at Athens, Greece. Received July 10, 1915.

40922. No. 91. *Broussa* rice. **40923.** No. 92. *Broussa* rice.

See S. P. I. No. 39545 for previous introduction and description.

40924. CELTIS AUDIBERTIANA Spach. Ulmaceæ. **Hackberry.**

From Paris, France. Presented by the director, Museum of Natural History. Received July 12, 1915.

The form of *Celtis occidentalis* cultivated in the gardens of the Paris Museum of Natural History. Leaves somewhat glaucous, scarcely shiny. Fruit-bearing pedicels two to three times as long as the petioles. Stones slightly larger than those of *C. occidentalis* of the more typical form.

40925. PHASEOLUS LUNATUS L. Fabaceæ. **Cape bean.**

From Marseille, France. Presented by Dr. E. Heckel, director, Colonial Museum of Marseille. Received July 14, 1915.

"*Phaseolus lunatus, kalamáka* of the Malagasies. Cape beans have taken the second place among the agricultural products of Madagascar in exportation. In commerce, this large bean bears different names, *haricot d'Orleans, haricot de Lima, de Paraguе,* etc. It has been known in Madagascar for a very long time, and it is mentioned in the accounts of voyages before the seventeenth century. Its culture is practiced almost exclusively in the Provinces of Tulear and Morondava, situated at the southwest of the island. The alluvial soils of the deltas of this region suit it admirably, particularly those which are rich in micaceous elements. These are ordinarily recovered from bararatas, large reeds (*Phragmites communis?*), attaining 4 meters in height and submerged during the winter. The soil is prepared by superficial working. This preparation commences in March and April, as soon as the waters subside. The bararatas (reeds) are cut and burned; they shoot again, but the young shoots are broken down with a stick and this encroaching vegetation disappears. The seeds are planted in holes from 3 to 4 meters apart, in March and April. Harvest takes place from September to December. Almost all of the crops of cape beans are irrigated. Sells in Marseille for 65 francs per 100 kilos." (*Heckel.*)

40926. CANARIUM OVATUM Engler. Balsameaceæ. **Pili nut.**

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received July 19, 1915.

"Because of the easy digestibility of these nuts, they are being used in increasing quantities for the preparation of an infant food, the excess of oil being removed and the nuts ground to a paste.

"These nuts have been gathered by one of our representatives residing on the island of Catanduanes and are fresh stock, hulled by the cold-water process. Mr. Jacobson stated that the shipment consists of at least two distinct types, and it is the short, well-rounded type that we have been able to germinate in our grounds in Luzon." (*Adn. Hernandez.*)

40927. Aleurites moluccana (L.) Willd. Euphorbiaceæ.
(*Aleurites triloba* Forst.) **Lumbang.**

From Littleriver, Fla. Procured from Mr. Charles A. Mosier. Received July 19, 1915.

40928 to 40935. Oryza sativa L. Poaceæ. **Rice.**

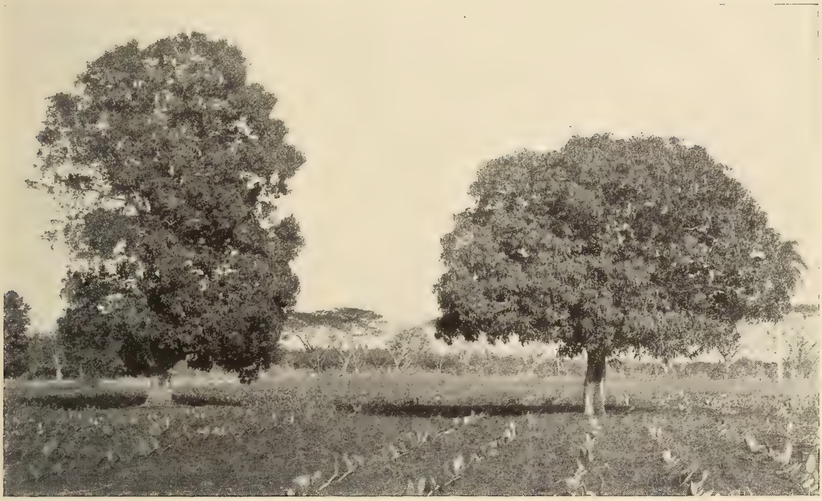
From Tananarivo, Madagascar. Presented by the Governor General of Madagascar. Received July 14, 1915.

40928.	No. 1.—A.	*Lava.*	**40932.**	No. 3.—A.	*Madinika.*
40929.	No. 1.—B.	*Lava.*	**40933.**	No. 3.—B.	*Madinika.*
40930.	No. 2.—A.	*Lava somotra.*	**40934.**	No. 4.—A.	*Vato.*
40931.	No. 2.—B.	*Lava somotra.*	**40935.**	No. 4.—B.	*Vato.*

40936. Bambos tulda longispiculata (Gamb. and Brand.) Bois and Grignan. Poaceæ. **Bamboo.**

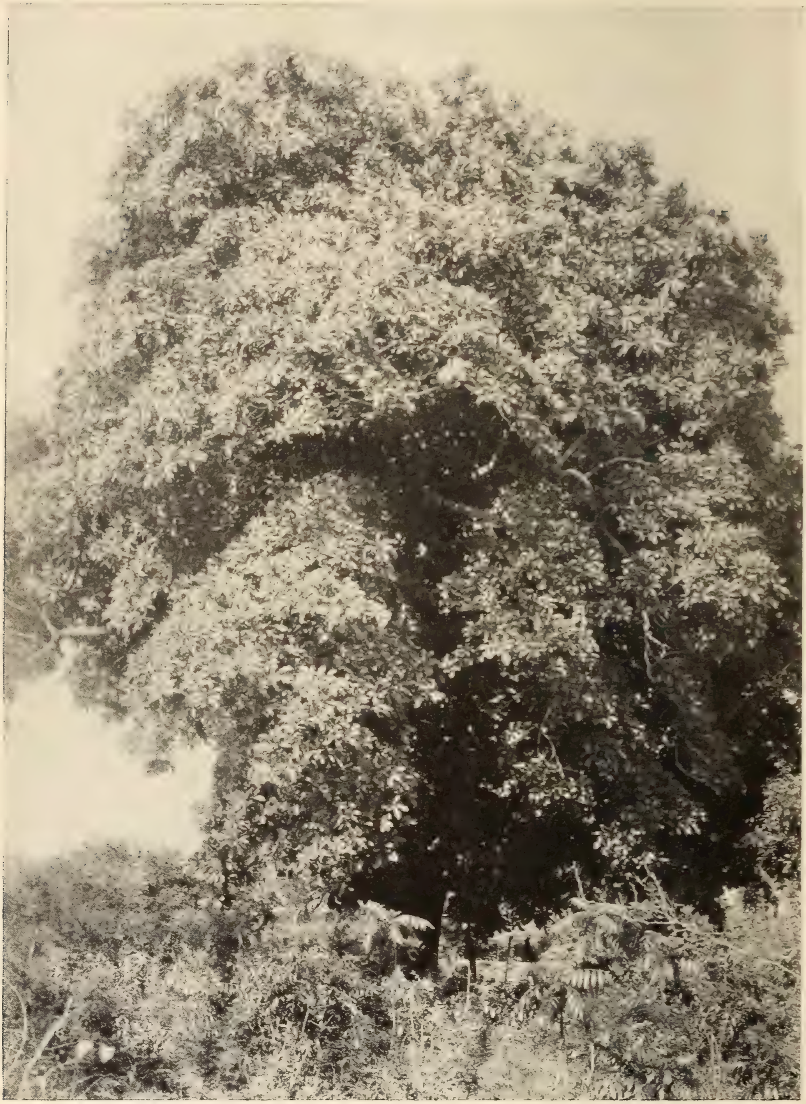
From Nice, France. Presented by Dr. A. Robertson Proschowsky. Plants received July 21, 1915.

"M. Rivière, who was here about a year ago and saw my plant, appeared to doubt that my specimen was exactly the same species as described by him under the name *Bambos macroculmis* (not from flowers, which he never saw). But I have the impression that his doubt depended mainly on the difference in size, his *B. macroculmis* acquiring up to 25 meters in height, while my plant has not until now produced shoots more than 15 to 18 meters in height. Still this seems of little importance, as my plant is in a rather poor condition, crowded all around by trees, palms, etc., and poorly exposed in poor soil, and there can be no doubt that under good conditions my plant would make a much better growth. Anyhow, my plant corresponds exactly to description of *B. macroculmis.* It has flowered for three consecutive years on one or two of the smallest shoots, but it is growing on just as usual, and evidently belongs to the bamboos which do not die after flowering. The stalks are comparatively compact, with less cavity than the ordinary Japanese and Chinese species so common in gardens, and very strong and lasting, which I can testify, having used them for prolongation of a very long and heavy ladder. This large bamboo is hardy in my badly exposed garden and therefore would be so generally on the Riviera. The new shoots start in autumn and generally do not finish development before spring, but when frost arrives they do not suffer; growth is simply arrested for some time. Of course it is possible that in low, water-logged ground and with lasting frosts the young shoots might be killed, but in my garden on a steep hill this has not happened. Unfortunately, no seed has been produced, but this species can be multiplied by slips of the crowded side branches which yearly start anew and form aerial rhizomes. If I should divide the clump, it would be a question of an enormous bulk, which, even when cutting away the stalks (which, according to my experience here when transplanting, can not be safely done, such clumps without leafage dying), would weigh nearly a hundred



SEEDLING MANGOS OF THE TWO PRINCIPAL CUBAN RACES, AT SANTIAGO DE LAS VEGAS. (SEE S. P. I. NOS. 40920 AND 40921.)

The tall tree on the left is typical of the race called *mango*, while the low, broad one is a *manga*. This classification, although one made by the natives, seems to hold in both tree and fruit characters, the *mango* type of fruit being nearly always elongated or longer than broad, frequently more or less reniform, and usually beaked. The fiber is long and coarse, but not very thick, and the pulp is slightly more acid than that of the *manga*. The *manga* type produced by the low broad trees has fruit nearly always broader than long, usually oblique at base and apex, with no beak. The fiber is fine and extremely abundant, almost impossible to separate from the very sweet pulp. (Photographed by Wilson Popenoe, Santiago de las Vegas, February 23, 1916; P16677FS.)



THE NARIZ TREE, ANACARDIUM EXCELSUM (BERT. AND BALB.) SKEELS, A RELATIVE OF THE CASHEW, AT TRINIDAD, CUBA. (SEE S. P. I. No. 40987.)

A magnificent South American tree, attaining a height of 65 feet, with an erect compact head of dark-green foliage. The fruits, which ripen in August, are dark brown, about an inch long, reniform and flattened, and shaped somewhat like a nose, whence the name *nariz*. The fruit stalk is not large and swollen, nor are the seeds considered edible, as in the cashew. The tree is worthy of trial as an ornamental, although the fruit appears to have no value. (Photographed by Wilson Popenoe, July 17, 1915; P16417FS.)

kilos. I think from what I have personally seen for years that the climate of southern California may be a little colder than that of the Riviera, since so many plants suffer in southern California which do not suffer here, and my California correspondents confirm my earlier personal experience. Still I think that the bamboo in question will grow, at least in all the sheltered parts of southern California, and undoubtedly in places such as Santa Barbara and San Diego, where, as my correspondents write me, the same species resist as here on the Riviera." (*Proschowsky.*)

40937. MELILOTUS ALBA Desr. Fabaceæ. **Melilot.**

From Changchun, Manchuria. Presented by Dr. R. J. Gordon, Irish Presbyterian Mission. Received July 8, 1915.

40938 to 40969. TRITICUM spp. Poaceæ. **Wheat.**

From Lyallpur, Punjab, India. Presented by the Department of Agriculture. Received July 15, 1915.

Quoted notes from Albert and Gabrielle L. C. Howard, Memoirs of the Department of Agriculture in India, vol. 2, no. 7. (The abbreviation D. means density of ear.)

40938 to 40940. TRITICUM DURUM Desf. **Durum wheat.**

40938. "Type No. 1. Var. *melanopus* Al. Awns long, black, but the black colour is lost very easily; chaff densely felted, white with a pinkish tinge, often spotted with mould fungi; grains long, amber, generally hard and flinty, although occasionally mottled ones are found; density varies with the rankness of growth; straw tall, slender but stiff; somewhat liable to rust; ripens late. This is the common macaroni wheat of the Punjab and was found in the Wadanak of Zira, Wadanak of Sialkot, Wadanak of Batala, Wadanak Kalchingari of Montgomery, Wadanak of Amritsar, Dagar of Pind Dadan Khan, Dagar of Wazirabad, Dagar of Shahpur, Pamman of Ferozepore, Dagar of Muzaffargarh, Dagar of Multan, Dagar of Montgomery, in the Wadanaks of Lyallpur, Ferozepore, and Amritsar, and the Palestine of Lahore."

40939. "Type No. 2. Var. *africanum* Kcke. Similar in most respects to type 1, but the ears taper to a point and are slightly longer; grain very dark red, hard on the whole, with a very few mottled grains; length of ear 84 mm.; D. [density of the ear] = 28. This type is more liable to rust than type 1. This type was only met with as an impurity in Wadanak Kalchingari of Montgomery."

40940. "Type No. 3. Var. *leucurum* Al. Awns long, white with a reddish tinge; chaff smooth, shiny, white with a pinkish tinge due to the veins on the glumes being red; grain very long and thin, white, much lighter in colour than type 1, generally very hard and translucent, hardly a mottled grain to be found; length of ear, 75 mm.; D. = 22; straw good; ripens late; not so liable to rust as type 1. This type was only found as an impurity in the Wadanak of Lyallpur in very small quantity. The grains of this wheat are so long that in cleaning prior to grinding they would pass over standard sieves with the large impurities."

40938 to 40969—Con. (Quoted notes by A and G. L. C. Howard.)

40941 to 40969. TRITICUM AESTIVUM L.

(*Triticum vulgare* Vill.)

"*T. compactum* Host. Dwarf wheats. Ears exceedingly dense and short, rarely over 5 cms. long, outer glumes keeled in the upper half and rounded in the lower half, straw very short and stiff, grains rounded.

"There are four varieties of dwarf wheats grown in the Punjab. These wheats are drought resisting and are generally grown on inundation moisture with little rain. They are also said to be good yielders and type 7 has a good reputation for bread making. Owing to the smallness of their grain they can, however, be used only for indigenous consumption and they are therefore being gradually replaced by common wheats. They agree with the common wheats in time of ripening and showed themselves exceedingly susceptible to early rust, *Puccinia triticina* Eriks., when grown at Pusa; in fact, they were almost destroyed by it. They are, however, fairly resistant to yellow rust. The ears are short and erect, the straw stiff, short (generally about 3 feet 6 inches or 4 feet), hollow throughout, as in common wheats, but much stouter.

"Humphries remarks that 'types 4 and 7 are extraordinarily small in the berry, so small that millers would hesitate to buy them if they contained any small seeds, because the machinery used for extracting the small seeds would take out simultaneously a very large proportion of the wheat berries themselves.'"

40941. *T. compactum.* "Type No. 4. Var. *erinaceum* Kcke. Ears bearded, with short bristly spreading awns very irregular in length, awns red; chaff smooth and dark red; grain very small, round, rather a light dirty red in colour, very difficult to distinguish from a dark amber, hard on the whole, with a few soft grains; ear length 50 mm.; D.= 38; straw shows no pink colour. To this type belongs the Makkhi of Chiniot."

40942. *T. compactum.* "Type No. 5. Var. *linaza* Kcke. Ears beardless; chaff felted with short hairs, white with a pinkish tinge due to the pink colour of the edges and the veins of the glumes; grain round, small, but larger than in type 4, amber coloured, hard on the whole, with a few soft and mottled grains; ear length 49 mm.; D.= 38; straw pinkish, turning black or greyish pink on ripening. This type was only met with in small quantity in the Makkawali of Dera Ghazi Khan."

40943. *T. compactum.* "Type No. 6. Var. *wernerianum* Kcke. Ears beardless, but with occasional very slight bearding; chaff smooth, white with a pinkish tinge; grain round, about the same size as in type 5, a clean light red, all soft; ear length 44 mm.; D.= 39; straw has no pink colour. This type was only found in small quantity in the Makini of Multan."

40944. *T. compactum.* "Type No. 7. Var. *humboldti* Kcke. Ears beardless; chaff smooth, white with a pinkish tinge; grain round, about the same size as in type 5, but possibly a little smaller, amber coloured, consistency very variable, hard, soft, and mottled grains found in about equal proportions; ear length 45 mm.; D.= 41; straw pinkish, turning black on ripening. This is the

40938 to 40969—Con. (Quoted notes by A. and G. L. C. Howard.)

common dwarf wheat of the Punjab, and was found in the Rodi of Shahpur, Rangrih or Ghiali of Kangra, Makini of Multan, Daudi of Muzaffargarh, Daudan of Multan, Makkawali of Dera Ghazi Khan, and in Daudi of Multan. Mr. A. C. Dobbs, of Lyallpur, found that this wheat was grown at Rawalpindi and that it was considered in that district as the best for bread making."

40945. "Type No. 8. Var. *barbarossa* Al. Ears bearded; awns red; chaff felted with short, rather sparse hairs, yellowish red; grain dark red, consistency variable, hard, soft, and mottled grains found in about equal proportions; ear length 78 mm.; D.= 24; straw good; ears erect and rather slender. This type was found in the Lal Kasar-wali of Lyallpur in very small quantity."

40946. Type No. 8 A. **40947.** Type No. 8 B.

40948. "Type No. 9. Var. *fuliginosum* Al. Ears bearded; awns stiff, stout, rather short, black but lose their colour very easily; glumes sharply keeled to the base; chaff densely felted with long hairs, the felting resembling very closely that found on the macaronis, chaff greyish white or yellowish white, pink at the edges, generally with black spots of Cladosporium; grain very dark red, on the whole hard with a few mottled grains, the shape resembling that of a common wheat; ear quadratic in section, somewhat club shaped at the top, somewhat compact; ear length variable, about 70 mm. on the average; D.= 25; straw stiff, stout, hollow throughout; ears very erect. This type was found in the Lal of Batala, Ratti of Montgomery and in the Lal Kale Kasar-wali of Lyallpur; it was also found in small quantity in the Lal Desi of Jhelum, Lal of Delhi, Pamman of Ferozepore, Dagar of Multan, Kunjhari of Muzaffargarh. This wheat is one of the most interesting types found in the Punjab, for although it must be classed as a common wheat, it appears to possess many of the characters of the macaroni wheats. The felting resembles very closely that of the macaroni wheats and is quite different to that found on the other felted common wheats or on the felted dwarf wheat. The shape of the glumes with the keeling continued sharply to the base resembles that of macaroni wheats. The hollow straw and the shape of the grain are, however, those of a common wheat. The shape of the ear with its compact sometimes club-shaped top, the stoutness of the straw, and the stiff awns remind one of the dwarf wheats, and it seems quite possible that this wheat, which is unique in India, may have arisen from a natural cross between a dwarf and macaroni wheat. This supposition is supported by the fact that we have found a dwarf wheat to be the female parent in some of the natural crosses found by us and described in the last part of this paper. At flowering time this wheat (type 9) appears to shed a vast amount of pollen and probably gives rise in this way to further natural crosses. It is interesting to note that this wheat is marked by Humphries as being the best of the 25 Punjab types submitted to him."

40938 to 40969—Con. (Quoted notes by A. and G. L. C. Howard.)

40949. Type No. 9 A.

40950. "Type No. 10. Var. *erythroleucon* Kcke. Ears bearded; awns red; chaff smooth, dull light red; grain amber coloured, liable to sprout in the ear, consistency variable, hard, soft, and mottled grains found in equal proportions; length of ear 82 mm.; D.= 21; straw short and weak, ears bend over when ripe; early. This type was found in the Safed of Moga, Mundi of Ludhiana, Jogia of Karnal."

40951. "Type No. 11. Var. *erythroleucon* Kcke. Ears bearded; awns red; chaff smooth, a more intense and brighter red than in type 10; grain amber coloured, liable to sprout in the ear, consistency variable, but with a majority of soft grains; ears squarer and denser than in type 10, ear length 76 mm.; D.= 25; straw tall and strong, ears stand erect; later than type 10. This type was found in the Safed of Amritsar, Sohan of Chiniot, Kunjhari of Dera Ghazi Khan, Daudi of Lyallpur, and in the Jogia of Karnal."

40952. "Type No. 12. Var. *erythroleucon* Kcke. Ears bearded; awns red with occasional blackening; chaff smooth, dull light red with a somewhat bluish tone, occasional blackening on the chaff; grain amber coloured, hard on the whole; ear length 86 mm.; D.= 21; straw intermediate in strength between that of types 10 and 11, pink, turning black on ripening, tall; ears bend over when ripe; early; grain easily shed. This type was found in the Rangrih of Palampur."

40953. "Type No. 13. Var. *ferrugineum* Al. Ears bearded; awns red; chaff smooth, shiny, yellowish or brownish red; grain red, intermediate in colour between the dark and light red-grained types, rather small, consistency variable, about two-thirds being hard; ear length 96 mm.; D.= 18; straw medium; ears fairly erect; rather late. This type was found in the Lal Kasar-wali of Lyallpur. The hard red of Gujar Khan also belongs to this type, but ripened a little later than the Lal Kasar-wali. This difference may easily disappear after the hard red of Gujar Khan is acclimatised at Lyallpur."

40954. "Type No. 14. Var. *erythrospermum* Kcke. Ears bearded; awns pinkish yellow; chaff smooth, white with a reddish tinge when ripe; grain light red, hard and soft grains in about equal proportions; ear length 80 mm.; D.= 23; straw weak and short; ears bend over when ripe; early; fairly rust resistant; sheds its grain more easily than type 15. This type was found in the Lal of Karnal, Lal of Sialkot, Lal of Attock, Lal Safed of Sirsa, Lal of Zira, Kasalu or Surkh of Ferozepore, Ratti or Lal of Pind Dadan Khan, Lal of Ludhiana, Desi Surkh of Jullunder, Lal Desi of Jhelum, Lal of Rawalpindi, Lal of Delhi, Kunjhari of Muzaffargarh."

40955. "Type No. 15. Var. *erythrospermum* Kcke. Ears bearded; awns pinkish yellow; chaff smooth, white with a reddish tinge when ripe; grain light red, consistency variable, but the majority are soft grains; ear length 80 mm.; D.= 25; straw tall and strong; ears erect when ripe; late; susceptible to rust; grains less easily

40938 to 40969—Con. (Quoted notes by A. and G. L. C. Howard.)

shed than in type 14. This type was found in the Ratti or Lal of Pind Dadan Khan, Watni of Shahpur, Kunjhari of Multan.

"Types 14 and 15 form the common red wheat of the Punjab. A glance at the names of the varieties will show that they are cultivated all over the province. They are very similar to, if not identical with, the common red wheats cultivated in the United Provinces. These two types are absolutely identical in the laboratory, but quite different in the field."

40956. "Type No. 16. Var. *graecum* Kcke. Ears bearded; awns rather pinkish yellow; chaff smooth, white with pink edges and veins; grain white, rather small, on the whole soft, but with some hard and mottled grains; ear length 78 mm.; D.= 23; straw fairly strong. This type was found in the Ghoni of Lahore, Safed of Ludhiana, Safed of Rohtak, Safed of Batala, Daudkhani of Dasuya, Daudkhani of Delhi, Pori of Montgomery, and in the Safed Kasar-wali of Lyallpur."

40957. "Type No. 17. Var. *delfii* Kcke. Ears beardless; chaff felted with short, rather sparse hairs, red with a bluish tinge; grain amber coloured, consistency variable; hard, soft, and mottled grains present in equal proportions; ear length 94 mm.; D.= 19; straw medium. This type was found in the Rodi of Attock, Ghoni of Gujrat, Ghoni of Sialkot, Khoni of Jhelum, Ghoni of Chiniot, Ghoni of Amritsar, Khoni of Batala, Mundli of Karnal, Mundli of Ludhiana, Safed of Lahore, Kanku of Palampur, Jhakrehun of Palampur, Safed Brij Sondha of Rohtak, and in small quantity in the Rodi of Muzaffargarh, Ghoni Lal, Ratti of Muzaffargarh, Desi of Dera Ghazi Khan, Suthra of Multan. This is a very common wheat in the Punjab."

40958. Type No. 17 B.

40959. "Type No. 18. Var. *delfii* Kcke. Ears beardless; chaff felted with short, rather sparse hairs, yellowish red; grain amber coloured, consistency variable, but the majority of the grains are soft; ear length 72 mm.; D.= 26; ears squarer and denser than in type 17; straw stronger than in type 17; later in ripening. This type was found in the Rodi of Muzaffargarh, Ghoni Lal, Ratti of Muzaffargarh, Desi of Dera Ghazi Khan, Suthra of Multan, and in small quantity in the Ghoni of Chiniot, Ghoni of Amritsar, Jhakrehun of Palampur."

40960. "Type No. 19. Var. *leucospermum* Kcke. Ears beardless, but occasional slight bearding met with; chaff felted with some short somewhat sparse hairs, white with pink veins or edges to the glumes; grain whiter than in 17, 18, and 21, but darker than 16; consistency variable, but about three-quarters of the grains soft; ear length 74 mm.; D.= 24; straw strong, pinkish, turning black on ripening. This type was found only in very small quantity in the Buggi of Leiah at Lyallpur."

40961. Type No. 19 D. **40962.** Type No. 19 H.

40963. "Type No. 20. Var. *alborubrum* Kcke. Ears beardless, with occasional very slight bearding; chaff smooth; light yellowish red; grain amber coloured, rather large, consistency variable, but about two-thirds of the grains soft; ear length 78 mm.; D.= 24;

40938 to 40969—Con. (Quoted notes by A. and G. L. C. Howard.)

straw taller and stronger, ears more erect and later in ripening than type 21; grain very easily shed. This type was only found in the Ghoni of Amritsar."

40964. "Type No. 21. Var. *alborubrum* Kcke. Ears beardless, with occasional very slight bearding; chaff smooth, brownish red, dull; grain amber coloured, but somewhat whiter than 17, 18, and 20, consistency variable, about an equal amount of hard, soft, and mottled grains; ear length 90 mm.; D.= 20; straw medium; ears bend over when ripe; earlier than type 20; grain very easily shed. This type was found in the Kanku of Palampur and in small quantity in the Rodi of Attock, Ghoni of Gujrat, Ghoni of Sialkot, Khoni of Jhelum, Khoni of Batala, Mundli of Karnal, Mundli of Jullunder, Mundli of Ludhiana, Jhakrehun of Palampur, Ratti of Muzaffargarh, Kunjhari of Muzaffargarh, Kunjhari of Multan, Safed Ghoni, and Ghoni Lal."

40965. "Type No. 22. Var. *milturum* Al. Ears beardless, sometimes slightly bearded; chaff smooth, shining, dark brownish red; grain very dark red, consistency variable, but on the whole the sample is hard; ear length 94 mm.; D.= 19; straw medium, but rather better than in type 23. This type was found in small quantity in the Ghoni of Sialkot and in Safed Ghoni."

40966. "Type No. 23. Var. *milturum* Al. Ears beardless; chaff smooth, dull, yellowish red; grain very light red, somewhat small, entirely soft; ear length 81 mm.; D.= 23; straw medium. This type was only found in the Ratti of Muzaffargarh."

40967. Type No. 23. Var. *milturum* Al.

40968. "Type No. 24. Var. *albidum* Al. Ears beardless; spikelets blunt; outer glumes short and rounded, chaff smooth, white with a reddish border; grain yellowish white, resembles 19, rather large, consistency variable, but on the whole the sample is soft; ear length 93 mm.; D.= 20; straw strong; ears bend over slightly. This type was found in the Koni of Chakwal, Kunj of Muzaffargarh, Buggi of Leiah, and Safed Ghoni."

40969. "Type No. 25. Var. *albidum* Al. Ears beardless, often slightly bearded; spikelets pointed, outer glumes long and pointed; chaff smooth, yellowish white, shiny, with very slight reddish border; grain larger than in any other of the types of common wheat in the Punjab, greyish white of a different tone of colour to any of the other white wheats; on the whole soft; ear length 100 mm.; D.= 20; straw very strong; ears erect. This type was found in Buggi of Leiah and Safed Ghoni. These two types, 24 and 25, differ in appearance so much from all the other wheats of the Punjab and bear such a strong resemblance to the Australian wheats introduced into the province that we can not help suspecting that they originally came from Australia."

40970. PHASEOLUS MUNGO L. Fabaceæ. **Urd.**

From Trinidad, British West Indies. Presented by Mr. W. G. Freeman, Assistant Director of Agriculture and Government Botanist, Department of Agriculture. Received July 13, 1915.

"*Woolly pyrol.* I believe this is going to be a valuable green-manure crop in southern Florida." (*C. V. Piper.*)

40971 and 40972.

From Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received July 15, 1915.

40971. ARDISIA CAPOLLINA A. DC. Myrsinaceæ.

A handsome shrub, related to *A. crenulata*, but distinguished by its entire, lanceolate leaves and wine-colored drupes. Flowers rose colored, in terminal panicles or clusters of umbels.

40972. AMYGDALUS MICROPHYLLA H. B. K. Amygdalaceæ.

Shrub about 3 feet high, with few spreading branches, thin oblong leaves bunched on the small branchlets, and white flowers somewhat smaller than those of *A. incana*.

40973 and 40974. LITCHI CHINENSIS Sonnerat. Sapindaceæ.

(*Nephelium litchi* Cambess.) **Litchi.**

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received July 24, 1915.

40973. "(No. 2304a. Shanghai, China. June 12, 1915.) About 20 pounds of seed, obtained from 250 pounds of fresh litchis, bought in the open market at 8 cents (Mexican silver) per pound. Said to have come from Canton. Of use as stocks for improved varieties and for selection work." (*Meyer.*)

40974. "(No. 2305a. Shanghai, China. June 19, 1915.) Fresh litchis, bought in the open market at 8 cents (Mexican silver) per pound. Said to have come from Canton. Of use as a stock for improved varieties and for selection work." (*Meyer.*)

40975 and 40976.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received July 21, 1915.

40975. ACACIA ARMATA R. Brown. Mimosaceæ.

"An evergreen bush, 4 to 6 meters in height, very dense. For the very driest poor soil." (*Proschowsky.*)

40976. MIMOSA ACULEATICARPA Ortega. Mimosaceæ.
(*Mimosa acanthocarpa* Poir.)

"One and one-half to 2 meters in height, covered all over with hooks and spines, forming impenetrable hedge. For the very driest poor soils." (*Proschowsky.*)

40977. ALEURITES MOLUCCANA (L.) Willd. Euphordiaceæ.

(*Aleurites triloba* Forst.) **Lumbang.**

From Manila, Philippine Islands. Presented by the Bureau of Agriculture. Received June 2, 1915.

"A handsome tree with spreading branches, alternate, lobed, pubescent leaves of a pale color, rounded or cordate at the base, with two glands at the top of the petiole. Flowers small, white, in terminal lax cymes; fruit fleshy, coriaceous, globose, with four shallow furrows; seeds one or two, rugose, gibbous. The *candlenut* tree is widely spread over Polynesia, a small part of Malaysia, and the Philippine Islands. It is remarkable that it has not established itself in Guam. Only a few specimens grow on the island, which are called either by the Philippine name *lumbang* or the Caroline Island name *raguar*. The natives say the nuts were brought here from the Caroline Islands. They have not come into use in Guam. Throughout Polynesia the nuts, strung on coconut-leaflet ribs, serve the natives for candles to light their houses. In Hawaii they are roasted, chopped up, mixed with seaweed, and served at native feasts as a relish. They yield an oil which is very fluid, of an amber color, without smell, insoluble in alcohol, readily saponifiable, and quick drying. This oil is a mild cathartic, acting in the same manner as castor oil, but causing no nausea or griping and having the further advantage of a nutty flavor and of being more prompt in its effects." (*Safford, Useful Plants of Guam.*)

40978 to 40983.

From Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Cuttings received July 26, 1915. Quoted notes by Mr. Popenoe.

40978 to 40982. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

40978. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Bartlett* avocado. A rather remarkable variety growing in the garden of Dr. Alberto Bartlett, of this town. It is said to bear two crops a year; the first crop is early and is now ripening; the second crop commences in December and the last fruit was eaten this year on May 8. In form this fruit is broadly pyriform, and in size about 4 inches long by 3 inches in thickness. The color is bright green, the surface smooth. The skin is rather thin, scarcely over 1 mm. in thickness. The flesh is creamy yellow near the seed, changing to pale green near the skin, of good texture and said to be of good quality, though not excellent. The seed is about the average size, but not objectionably large; the seed coats are rather thick and loose, but I found no specimens in which the seed rattled in the cavity. The tree is evidently very productive, judging by the present crop. It is growing in a very favorable situation, however, and received a good deal of fertilizer. The fruit is attractive in appearance and seems well worthy of a trial in southern Florida."

40979. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Don Carlos* avocado. A small variety, said to be of exceptionally choice quality, from the Quinta Aguas Azules of Dona Serafina Wilson, Viuda de Bartlett, near Guadalupe, about 15 miles from Placetas. This fruit is almost perfectly round in form and of light yellowish green color. The skin is thick, the flesh of fine, oily texture, and the seed very small in comparison to the size of the fruit. The tree is bearing an excellent crop and can probably be considered productive. It ripens its fruit from August to October, and is not, therefore, a very late variety, but because of its good quality it is considered worthy of a trial in southern Florida. It was the favorite fruit of Don Carlos Bartlett, the former owner of the Quinta Aguas Azules, and has been named for him."

40980. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Guadalupe* avocado. A late variety from the quinta of Sr. Joaquin Wilson at Guadalupe, about 15 miles from Placetas. This is a broadly pyriform fruit, narrowed at the base, but not noticeably 'necked,' and somewhat oblique at the apex. It will probably weigh 12 to 14 ounces when ripe. The color is green, sometimes

40978 to 40983—Con. (Quoted notes by Mr. Wilson Popenoe.)

mottled with maroon; the skin is rather thin, about 1 mm. in thickness. The flesh, which seems to be entirely free from fiber, is said to be of very good flavor. The seed is of about the average size, not objectionably large, and apparently tight in the cavity. This tree produces the latest fruits of any on the Wilson farm, but the crop does not all ripen late, and only a few fruits hang on until February. At the present time there are fruits in various stages of growth upon the trees, some almost fully grown, others still quite small. Sr. Joaquin Wilson claims that he has picked ripe fruit from this tree during a large portion of the year. It does not appear to be a very heavy bearer, however. For trial in southern Florida."

40981. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Merced* avocado. The latest variety growing in the Quinta Aguas Azules of Dona Serafina Wilson, Viuda de Bartlett, near Guadalupe, about 15 miles from Placetas. The fruit is said to remain on the tree until February. It is broadly pyriform, very similar to *Pollock* in shape, but probably not over 1 pound in weight, judging by its present size. The color when ripe is said to be green and the quality excellent. The tree is old and in poor condition; it is not bearing a good crop this season, but might fruit more heavily under favorable conditions. For trial in southern Florida."

40982. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Wilson* avocado. A late variety, said to be of unusually good quality, from the quinta of Sr. Joaquin Wilson at Guadalupe, about 15 miles from Placetas. This is a rather small fruit, probably not over 8 or 10 ounces in weight, round to very broadly oval in form, usually somewhat oblique at the apical end. The color when ripe is said to be very light green. The skin is 2 mm. in thickness. The flesh is perfectly free from fiber and said to be of unusually fine texture and rich flavor. The seed is very small in proportion to the size of the fruit. According to Sr. Joaquin Wilson, after whom the variety is named, it ripens about Christmas. The tree is carrying an excellent crop and seems to be all that could be desired in regard to productiveness. While rather small in size, this seems to be a valuable fruit, and should be tried in southern Florida."

40983. MANGIFERA INDICA L. Anacardiaceæ. Mango.

"(Santiago de Cuba, July 23, 1915.) *Biscochuelo* mango. This is probably the best type of mango grown in the vicinity of Santiago de Cuba, and excepting the *Filipino* one of the very best in the island. It is quite common here and very abundant on the markets, where the fruits are sold at $2 per hundred. *Biscochuelo* is a fruit of rather unique form differing from all others I have seen in Cuba. It is oval to subreniform, decidedly oblique, the left shoulder rounded to very broad and marked by a deep suture, which extends some distance down the ventral side of the fruit, the right shoulder usually falling abruptly. The apex is rather sharp and sometimes almost beaked. In cross section the fruit is broadly oval. The weight is 8 to 14 ounces. The general color, when the fruit is fully ripe, is clear light orange, but as seen in the market they are frequently tinged with green. The skin is thick and tough, the flesh bright orange-yellow, firm and meaty, with a faint but pleasant aroma and very

40978 to 40983—Con. (Quoted notes by Mr. Wilson Popenoe.)

little fiber for a seedling type. The flavor is sweet even when the fruit is still quite hard, and when fully ripe it is very pleasant. The seed is reniform in outline, with long fiber on the ventral edge and short stiff fibers elsewhere, the embryos being one to five in number. Most of the specimens examined were polyembryonic. Seems worthy of trial in southern Florida."

40984 to 40986.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, Horticultural Division, Gizeh Branch, Ministry of Agriculture. Cuttings received July 29, 1915.

40984 and 40985. FICUS SYCOMORUS L. Moraceæ. **Pharaoh's fig.**

40984. "*Baladi.*" **40985.** "*Kelabi.*"

See S. P. I. No. 39858 for previous introduction.

40986. TAMARIX APHYLLA (L.) Karsten. Tamaricaceæ. **Tamarisk.**
(*Tamarix articulata* Vahl.)

See S. P. I. No. 39856 for previous introduction and description.

40987 and 40988.

From Trinidad, Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received July 21, 1915.

40987. ANACARDIUM EXCELSUM (Bert. and Balb.) Skeels. Anacardiaceæ.
(*Anacardium rhinocarpus* DC.) **Nariz.**

"(Trinidad, Santa Clara Province, Cuba, July 17, 1915.) *Nariz.* A magnificent tree, native of South America. It is very rare here in Cuba, but there are four or five fine old specimens beside the cart road from Casilda to Trinidad, and it is from these specimens (which have been noted by Roig and de la Maza, Flora de Cuba, p. 131) that this specimen of seed was obtained. The *nariz* attains 60 or 65 feet in height, forming an erect but rather broad, compact head of dark-green foliage. As a shade and ornamental tree it should have considerable value. The leaves are entire, or nearly so, upon stout petioles one-half to 1 inch long, the blades obovate, oblanceolate, or spatulate, 6 to 18 inches long, 2½ to 6 inches broad, the apex obtuse to subacute, the base cuneate-attenuate, the surface smooth and deep green above, somewhat paler beneath, the venation raised below. The fruits ripen principally in August; they are dark brown, about an inch long, reniform and flattened, shaped somewhat like a nose, whence the name *nariz.* Unlike the cashew, the fruit stalk is not large and swollen, but is inconspicuous. The seeds are not considered edible. While this tree appears to have no particular economic value, it is worthy of trial as an ornamental, and it would also be of interest to test it as a stock for its relative, the mango." (*Popenoe.*)

For an illustration of the nariz tree, see Plate II.

40988. CORDIA ALBA (Jacq.) Roem. and Schult. Boraginaceæ.

"(Trinidad, Santa Clara Province, Cuba, July 17, 1915.) *Ateje.* A large shrub, 15 to 18 feet high, common along the eastern edge of the Valley of San Luis. It is bushy, branching close to the ground and sending up long, stiff shoots well furnished with dark-green foliage. The leaves are alternate, obovate to ovate-elliptical, 3 to 4 inches long, with entire margin and the surface covered with short, bristly hairs; petioles about an inch long, terete. The flowers, which are pale yellow and about

40987 and 40988—Continued.

half an inch in diameter, are borne in broad, flat-topped corymbs sometimes a foot across. The oblong-obovate fruits are half an inch in length and pearly white when ripe, inclosing a single large seed. It is apparently a good melliferous plant and of considerable ornamental value. For trial in southern Florida and southern California." (*Popenoe.*)

40989. SACCHARUM CILIARE Anderss. Poaceæ. **Elephant grass.**

From St. Kitts, British West Indies. Presented by Mr. F. R. Shepherd, curator, Botanic Station. Received July 22, 1915.

"It is the *sara* of the classic authors of India and is met with throughout the plains and lower hills and distributed to China. In the Punjab it often covers large tracts of country and is frequently planted in lines or dividing hedges, especially in low-lying localities subject to periodic inundation. Sir William Jones says: 'This beautiful and superb grass is highly celebrated in the Puranas, the Indian god of war having been born in a grove of it, which burst into flame; the gods gave notice of his birth to the nymph of the Pleiads, who descended and suckled the child; thence named Carticeya. The *cásá* (*kásá* or *káns*) vulgarly *casia* (*S. spontaneum*) has a shorter culm, leaves much narrower, longer and thicker hairs, but a smaller panicle, less compounded, without the purplish tints of the *sara;* it is often described with praise by the Hindu poets for the whiteness of its blossoms, which give a large plain, at some distance, the appearance of a broad river. Both plants are extremely useful to the Indians, who harden the internodal parts of the culms and cut them into implements for writing on their polished paper. From the *munj*, or culm, of the *sara* was made the *maunji*, or holy thread, ordained by Menu to form the sacerdotal girdle, in preference even to the *cusa* grass.' *Munj* fiber is obtained from the leaf sheaths; the blades are the *sar* or *sara* used in thatching houses and as a paper material; the contained flowering stem is the *bind* or *vind;* the panicle or flowering stem is the *sirki*, *til*, or *thili*, used in thatching boats, carts, etc.; *sentha* or *kana* is the lower, stronger portions of the flowering stem, used in the manufacture of chairs, stools, tables, baskets, and screens; and *tilak*, *tilon*, or *ghua* are names that denote the flowers. Some of these names, such as *munj* and *sara*, have been supposed to denote the products of different species, instead of different parts of one and the same plant; hence has originated much of the confusion that prevails. *Sara* is used in paper making and *munj* as a textile fiber. The much-prized *munj* is strong, elastic, and has a wonderful power of enduring moisture without decaying. It is extensively employed in the manufacture of cordage, ropes, the famed Delhi mats, and in the preparation of baskets, etc. *Munj* mats are reported to be proof against white ants, but are hard on shoe leather, harsh to the foot, and fatiguing when walked on for any length of time. These are largely produced in Allahabad, Agra, Delhi, and are traded in all over India, and within recent years have begun to find their way to Europe. In the early spring the old grass is often fired, when shortly after a crop of young leaves is produced from the stools, which is much valued as fodder." (*Watt, Commercial Products of India, p. 929–930.*)

40990. PASSIFLORA EDULIS Sims. Passifloraceæ. **Passion fruit.**

From Garrawin, Mangrove Mountain, via Gosford, Sydney, Australia. Presented by Mr. J. Harrison. Received July 28, 1915.

"Seeds of our commercial variety of *P. edulis*, of which we in this district are the principal growers." (*Harrison.*)

40991. Mangifera indica L. Anacardiaceæ. Mango.

From Manila, Philippine Islands. Presented by Mr. William S. Lyon, Gardens of Nagtajan. Received August 4, 1915.

Seeds sent in continuation of Mr. Lyon's experiments in shipping mango seeds to the United States. Three plants are being grown from the six seeds received.

40992. Passiflora edulis Sims. Passifloraceæ. Passion fruit.

From Tucuman, Argentina. Presented by Mr. H. F. Schultz, horticulturist, Agricultural Experiment Station. Received August 2, 1915.

"Seeds of a superior yellow-fruited variety of Passiflora grown at Calilegua, Argentina. I expect to plant this variety quite extensively in this province under different local conditions of soil and climate. We have recently had very severe weather, the temperature going down to 5° C. below zero, which naturally has resulted in considerable damage to tender tropical and subtropical trees." (*Schultz.*)

40993. Psidium guayabita A. Richard. Myrtaceæ. Guayabita.

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station. Received August 5, 1915.

"This is a species peculiar to the western portion of Pinar del Rio, where it is called *guayabita del Pinar.* The fruit is edible, but not very valuable. A very popular aromatic liquor is prepared from the fruit, and there is a factory in Pinar del Rio which has patented the product with the name of *Licor de guayabita del Pinar.*" (*Roig.*)

40994 and 40995.

From Santiago de las Vegas, Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received August 3, 1915.

40994. Elaeis guineensis Jacq. Phœnicaceæ. Guinea oil palm.

"Seeds of the oil palm obtained from an old plant growing on the property of Sr. Brito, near Santiago de las Vegas. This palm seems to be at home here, but it is very rarely seen in cultivation. It has already been introduced into the United States at various times." (*Popenoe.*)

40995. Enterolobium cyclocarpum (Jacq.) Griseb. Mimosaceæ.

"*Oreja de judío.* A fine leguminous tree extensively used in this region as a shade tree along avenues and carreteras. Of the four or five different species used on the rock road from Santiago de las Vegas to Havana this is certainly one of the best, growing to a considerable height and branching to form a symmetrical, rounded head of deep-green foliage, giving a fairly dense shade and presenting an attractive appearance. While it has already been planted in Florida, I know of no avenues of it in that State, and it might advantageously be propagated at Miami, I believe, with the intention of testing it as an avenue tree." (*Popenoe.*)

40996. Colocasia esculenta (L.) Schott. Araceæ. Taro.

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder.

"(No. 208. *Uahi a Pele.*) The varietal name means 'smoke of Pele,' or 'volcano smoke,' Pele being the goddess or spirit of the volcano Kilauea. The leaf blade is dark olive bronze, shaded with purple; petiole maroon, varying from dark to light. The sap is reddish. The plant is very ornamental." (*R. A. Young.*)

40997 to 40999. PRUNUS spp. Amygdalaceæ.

From Jamaica Plain, Mass. Presented by Prof. C. S. Sargent, Arnold Arboretum. Received August 9, 1915.

40997. PRUNUS MAXIMOWICZII Rupr. Maximowicz's cherry.

"Collected July 24, 1915."

"A tree about 25 feet high, with horizontal branches. Leaves obovate, about 1½ inches long, somewhat coarsely toothed, nearly glabrous; petioles slender, about one-half inch long. Flowers white, on slender hairy peduncles, one or two on each flowering shoot. Fruit crimson, the size of small peas. Japan." (*Kew Bulletin, New Garden Plants, 1903.*)

See S. P. I. No. 40189 for previous introduction and description.

40998. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino.
(*Prunus sargentii* Rehder.) Sargent's cherry.

"Seed. Arboretum, 1915."

"A species which has been confused with [the Japanese flowering cherry heretofore called] *P. pseudo-cerasus*, from which it differs by having all its parts glabrous. It is nearest allied to *P. serrulata*, differing by having sessile umbels and more coarsely toothed leaves. Japan." (*Kew Bulletin, New Garden Plants, 1909.*)

See S. P. I. Nos. 38761 and 40190 for previous introductions and description.

40999. PRUNUS YEDOENSIS Matsum. Flowering cherry.

"Seed. Arboretum, July 12, 1915."

"A rather large tree with smooth branches and gray bark; young leaves pubescent along the veins; older leaves quite glabrous, broadly elliptic or ovate to oblong; base acute, oblique, or subrotund. Flowers precocious, rose-tinted fading to white, in 2 to 3 flowered corymbs. This tree differs from *P. pseudo-cerasus* in its precocious flowers, its pilose style, and its somewhat pubescent petioles and pedicels. Cultivated in gardens in Tokyo. (Adapted from the original description, *Tokyo Botanical Magazine, vol. 15.*)

41000. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z. Amygdalaceæ.
(*Prunus davidiana* Franch.) **Wild peach.**

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., August 8, 1915.

"(No. 2299a. Peking, China, May 19, 1915.) Stones of the well-known *davidiana* peach; a valuable stock for various stone fruits. Purchased from a native collector who obtained them in the Western Hills, near Peking." (*Meyer.*)

41001. CANARIUM AMBOINENSE Hochr. Balsameaceæ.

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received August 14, 1915.

"A burseraceous tree 80 to 90 feet high, closely related to *C. moluccana*, but differing in the nearly smooth, oblong fruit, that of *C. moluccana* being very rough and very much more elongate. This tree branches about 25 feet from the ground, trunk about 8 feet in circumference; possesses large arching prop roots at the base; bark smooth and white; crown umbrella shaped." (*Hochreutiner, Plantae Bogoriensis Exsiccatae, p. 55.*)

41002. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bael fruit.**
(*Aegle marmelos* Correa.)

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Botanic Gardens. Received August 31, 1915.

See S. P. I. Nos. 24450 and 33094 for previous introductions and description.

41003. POUTERIA CAIMITO (Ruiz and Pav.) Radlkofer. Sapotaceæ.
(*Lucuma caimito* Roem. and Schult.) **Abiu.**

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunnicutt, Escola Agricola de Lavras. Received August 5, 1915.

"A timber tree with edible fruits. It looks very much like *cabelludinho.* The fruit is a beautiful golden yellow and is the shape of the fruit of the *limão do matto.* The fruit is somewhat sticky, but of a delicious flavor. The one we have on our place is a beautiful bush at present and would do very well as an ornamental plant. It is found in the States of Espirito Santo, Sao Paulo, and Minas Geraes." (*Hunnicutt.*)

41004. LITCHI CHINENSIS Sonnerat. Sapindaceæ. **Litchi.**
(*Nephelium litchi* Cambess.)

From Amoy, China. Presented by Mrs. L. W. Kip, at the request of Mr. John M. Nixon, New York City. Received August 21, 1915.

" Some of the seeds came from Canton and Swatow, though I could not see any difference in the fruits from those grown in this region. The Chinese say that the litchi does not come true from seed, so they propagate it by scraping some of the bark from a branch and wrapping mud around it till rooted. Should do well in Florida and southern California and would be sure to flourish in Porto Rico." (*Kip.*)

41005. FRAGARIA CHILOENSIS (L.) Duches. Rosaceæ.
Strawberry.

From Guayaquil, Ecuador. Presented by Mr. Frederick W. Goding, consul general. Received August 20, 1915.

" Wild strawberry seeds, forwarded to this office by Prof. Abelardo Pachano, of the chair of agronomy, Escuela de Agronomia, Ambato, Ecuador, who writes as follows: 'Seed of Fragaria (*frutilla* as we call them). Please remember that they grow most extensively at Huachi, a country sandy and dry as the Sahara.' This is the only species recorded from Ecuador, but there may be others, and if so seeds will be procured and forwarded." (*Goding.*)

41006 and 41007. FRAGARIA spp. Rosaceæ. **Strawberry.**

From Bogota, Colombia. Presented by Mr. Thaddeus A. Thompson, American minister. Received August 21, 1915. Quoted notes by Mr. Thompson.

" The consuls in Barranquilla and Cartagena inform me that they believe this section of Colombia is the only one which produces strawberries, and I am of the opinion that they are more or less correct in their belief."

41006. FRAGARIA CHILOENSIS (L.) Duches.

" *Chile.* Seeds of a rather white strawberry, which, I understand, is brought from a considerable distance, and which is not usually called a strawberry (*fresa*), but is known by the name of *chile.*"

41007. FRAGARIA VESCA L.

" Seeds of the common red strawberry, which is procurable here throughout the year."

41008. POLAKOWSKIA TACACO Pittier. Cucurbitaceæ. Tacaco.

From Costa Rica. Presented by Mr. Carlos Wercklé, at the request of Mr. J. E. Van der Laat, director, Department of Agriculture. Received August 20, 1915.

"Leave the fruits until shriveled, then put them in a pile of rotten leaves or very loose peat, as they do not sprout if planted in common garden earth." (*Wercklé.*)

See S. P. I. Nos. 26244, 26245, and 36592 for previous introductions.

41009 to 41016. TRITICUM spp. Poaceæ. Wheat.

From Northern Circle, Jubbalpore, Central Provinces, India. Presented by G. Evans, Deputy Director of Agriculture. Received July 30, 1915.

41009 to 41011. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

41009. *Hansi pissi* (soft Hansi).

41010. *Sukerhai pissi* (soft Sukerhai).

41011. *Murya.*

41012 to 41016. TRITICUM DURUM Desf.

41012. *Bansi.*

Bansi is described as a hard red wheat by Watt, in Commercial Products of India.

41013. *Dahutia.*

Probably the same variety that Watt describes as *Daodia*, soft and starchy, white.

41014. *Howrah.*

41015. *Jalalia.*

Watt, in Commercial Products of India, describes this as hard and glutinous, white.

41016. *Tigharia.*

41017 to 41029. TRITICUM spp. Poaceæ. Wheat.

From Petrograd, Russia. Presented by Dr. Robert Regel, chief, Bureau of Applied Botany. Received August 17, 1915. Quoted notes by Dr. Regel.

41017 to 41023. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

41017. "No. 126. Var. *ferrugineum* Al., subvariety *sibiricum*. Collected in Perm Government, 1906. Received from the Agricultural Society of the Province. Called *Krasnokoloska*, spring form. Grown by the bureau (pure line 0272A2, 1914, sowing 75, Government of Voronezh)."

41018. "No. 273. Var. *ferrugineum* Al., subvariety *rossicum*. Collected in Tomsk Government, 1903. Received through Prof. Prjanishnikov. Spring form. Grown by the bureau (pure line 062A2, 1913, sowing 46, Voronezh Government)."

41019. "No. 902. Var. *alborubrum* Körn., subvariety *orientale*. Collected in Bokhara, 1909. Received from exhibition in Tashkent from the collection of Bokharian Emir. Winter form. Grown by the bureau (sowing 30, 1911–12, Petrokof Government)."

41017 to 41029—Continued. (Quoted notes by Dr. R. Regel.)

41020. "No. 1423. Var. *erythrospermum* Körn., subvariety *duriusculum.* From Samarkand Province, 1909. Received from Mr. Nurmatov. Called *Kizyl-bogara,* spring wheat. Grown by the bureau (pure line 0326A4, 1914, experiment field of Prasnovodopadsk)."

41021. "No. 1879. Var. *lutescens* Al., subvariety *poltawense.* Collected in Ekaterinoslav Government, 1910. Received from the Agricultural School, Mariinsko. Called *Poltavka,* spring form. Grown by the bureau (sowing 43, 1911, Kursk Government)."

41022. "No. 1986. Var. *graecum* Körn., subvariety *amylosum.* Collected in Samara Government, 1910. Received through Mr. Tshechovitsh. Called *Chivinka,* spring form. Grown by the bureau (pure line 0402A3, 1913, sowing 64, Elisabetpol Government)."

41023. "No. 3237. *T. compactum* Host., var. *fetisowii* Körn., subvariety *burnaschewi.* Collected in Semiretshje Province, 1912. Received from Agricultural School of Kopal. Called *Teremkovaja,* spring form. Grown by the bureau (original sample, C. Flaxsberger)."

41024 and 41025. TRITICUM DICOCCUM Schrank.

41024. "No. 417. Var. *farrum* Bayle, subvariety *arras* Hochst. Collected in Samara Government, 1908. Received from Mr. Jelagitsh. Spring form. Grown by the bureau (pure line 094A4, 1913, sowing 66, Voronezh Government)."

41025. "No. 859. Var. *rufum* Schubl., subvariety *maturatum.* Collected in Samara Government, 1909. Received from Mr. Karamzin. Spring form. Grown by the bureau (pure line 0139A3, 1912, sowing 54, Voronezh Government)."

41026 to 41028. TRITICUM DURUM Desf.

41026. "No. 216. Var. *hordeiforme* Host., subvariety *densiusculum.* Collected in Tomsk Government, 1903. Received through Prof. Prjanishnikov. Spring form. Grown by the bureau (pure line 074A3, 1914, sowing 75, Voronezh Government)."

41027. "No. 465. Var. *coerulescens* Bayle. Collected in Tomsk Government, 1907. Received through Mr. Korenko. Spring form. Grown by the bureau (pure line 0295A4, 1914, sowing 75, Voronezh Government)."

41028. "No. 830. Var. *hordeiforme* Host., subvariety *laxiusculum.* Collected in Kursk Government, 1909. Received through Mr. Malzew. Spring form. Grown by the bureau (pure line 0123A4, 1913, sowing 66, Voronezh Government)."

41029. TRITICUM TURGIDUM L.

"No. 533. Var. *speciosissimum* Körn. Collected in Tiflis Government. 1908. Received from Miss Mlokosjevitsh. Grown by the bureau (pure line 0212A2, 1912–13, sowing 61, Elisabetpol Government)."

41030 and 41031.

From Songdo, Chosen (Korea). Presented by Rev. C. H. Deal, Anglo-Korean School. Received August 12, 1915.

41030. RAPHANUS SATIVUS L. Brassicaceæ. **Radish.**

41030 and 41031—Continued.

41031. BRASSICA CHINENSIS Jusl. Brassicaceæ. **Pakchoi.**

"Korean cabbage. I think this is strictly a Korean article, as I have never met with it anywhere else. It grows very much like celery, but with leaves very much like a turnip or mustard leaf. The stems are stocky and blanch beautifully. It is used here for making a kind of pickle called *Kimchi.* The natives call the cabbage *Păchōō,* which would be a good name in case you have not already introduced the seed under another name. The seeds are planted in the fall, about September, in hills about 15 inches apart each way and thinned to one stalk to a hill. It is not gathered until after frost, just before the first heavy freeze. It takes a good deal of water and rich land and plenty of fertilizer." (*Deal.*)

41032 to 41051. TRITICUM spp. Poaceæ. Wheat.

From Tunis, northern Africa. Presented by L. Guillochon, Botanical Service. Received August 17, 1915.

"Varieties commercially cultivated in Tunis, but selected by the Agricultural Experiment Station Service." (*Guillochon.*)

41032 to 41034. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

41032. *Allorca.*
41033. *Mahon.*
41034. *Richelle.*

41035 to 41051. TRITICUM DURUM Desf. **Durum wheat.**

41035. *Médéah.*
41036. *Biskri Smooth.*
41037. *Namira.*
41038. *Real Forte.*
41039. *Lenah Khetifa.*
41040. *Sbei.*
41041. *Agili Pubescent.*
41042. *Smooth Sbei.*
41043. *Taganrog.*
41044. *Mekki.*
41045. *Mahmoudi.*
41046. *Mahmoudi* A G^{3}.
41047. *Azizi.*
41048. *Adjini.*
41049. *Allemand.*
41050. *Berbern.*
41051. *Souri.*

41052. LITCHI CHINENSIS Sonnerat. Sapindaceæ. Litchi.

(*Nephelium litchi* Cambess.)

From Hongkong, China. Presented by Mr. H. Green, acting superintendent, Botanical and Forestry Department. Received August 30, 1915.

See S. P. I. No. 38779 for description.

41053. DIMOCARPUS LONGAN Lour. Sapindaceæ. Longan.

(*Nephelium longana* Cambess.)

From Littleriver, Fla. Presented by Mr. Charles Simpson. Received August 30, 1915.

"The longan tree is likewise a native of southern China, where it is cultivated for the sake of its fruit. Its leaves have generally five pairs of leaflets much resembling those of the litchi, but it is readily distinguished by its flowers having a deeply 5-parted calyx. The longan is a smaller fruit than the litchi, varying from 1 inch to 1½ inches in diameter and quite round, with a nearly smooth, brittle skin of a yellowish brown color. It contains a similar semitransparent pulp, of an agreeable sweet or subacid flavor, and is largely sold in the markets." (*Treasury of Botany, vol. 2, p. 784.*)

To be tested as a stock for *Litchi chinensis.*

See S. P. I. Nos. 32006, 34206, and 39551 for previous introductions.

For an illustration of the longan tree in fruit in Florida, see Plate III.

41054. LITCHI CHINENSIS Sonnerat. Sapindaceæ. **Litchi.**
(*Nephelium litchi* Cambess.)

From Canton, China. Presented by Mr. G. Weidman Groff, Canton Christian College. Received September 2, 1915.

"*Wai chih li chi.*"

See S. P. I. No. 38779 for description.

41055. PENNISETUM LONGISTYLUM Hochst. Poaceæ.
Kikuyu grass.

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany. Cuttings received September 3, 1915.

"*Kikuyu* grass. We originally obtained this grass from British East Africa, which, so far as our experience goes, would appear to be one of the most promising grasses that we have in this country. So far, although the grass has been under cultivation at our botanical station for the past four years, it has shown no signs of forming seed, and it was only last summer that it flowered and enabled us to have it determined botanically. The grass has a creeping habit, and cattle are passionately fond of it; it also makes a nice hay grass." (*Evans.*)

41056. ALLIUM CEPA L. Liliaceæ. **Onion.**

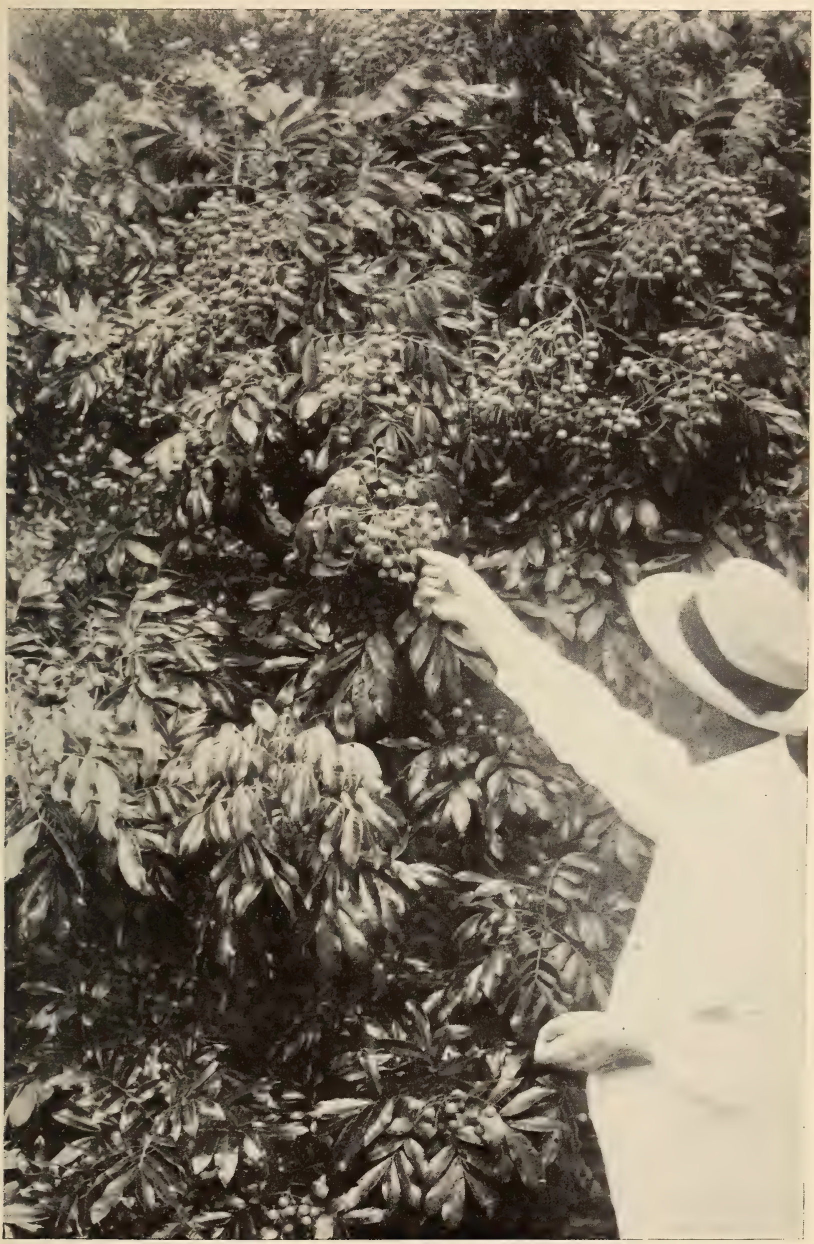
From Teheran, Persia. Presented by Col. J. N. Merrill, Persian Army. Received September 3, 1915.

"Onion seed from Tarum, which is about 24 miles west of Zendjan (Zinjan), in western Persia. Mr. R. S. Reed, Controller of Finances of Zendjan, was kind enough to get me the seed. Tarum has an altitude of about 4,000 feet; irrigation is used; soil gravelly, probably contains alkali. They are the largest onions I have seen, some of them being 6 inches in diameter by 4 in depth or larger. Mr. Reed says the onions of Tarum are much esteemed by the Persians, who eat them raw, as they have such good flavor." (*Merrill.*)

41057. MYRCIARIA FLORIBUNDA (West) Berg. Myrtaceæ.
Guava berry.

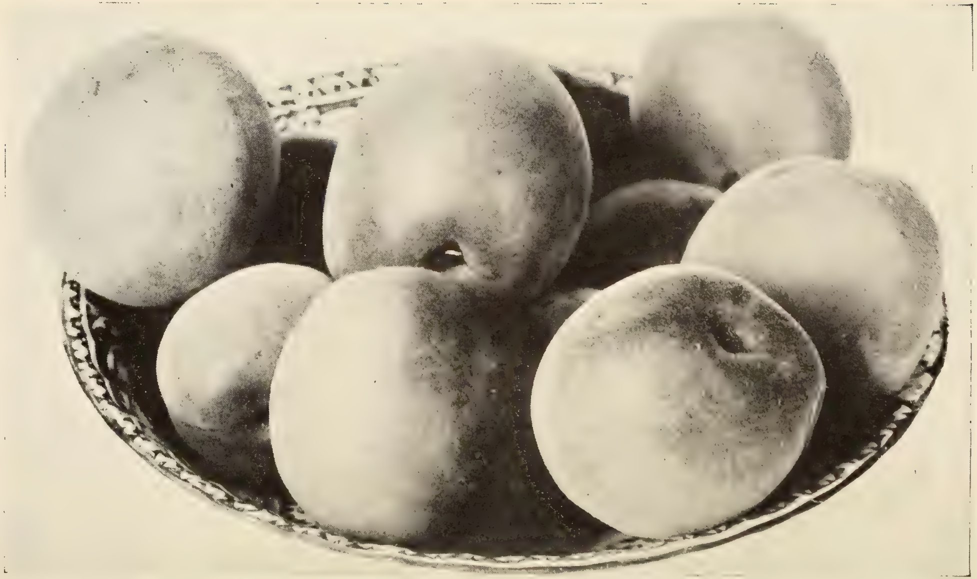
From St. Croix, Danish West Indies. Presented by Mr. Longfield Smith, director, Agricultural Experiment Station. Received August 30, 1915.

"Seeds of the guava-berry tree. The fruits of this tree make a delicious preserve with an aromatic flavor; they are also used with rum for making a liquor called guava-berry rum." (*Smith.*)



THE LONGAN, DIMOCARPUS LONGAN LOUR. (NEPHELIUM LONGANA CAMBESS.), IN FRUIT IN FLORIDA. (SEE S. P. I. NO. 41053.)

This highly prized southern Chinese fruit tree bears abundantly in Florida, but the fruits appear to have little value, perhaps because selection has not been carried on to any extent. The profuse fruiting habit, the flourishing condition of this tree in Reasoner Brothers' tropical fruit shed, and the value placed on the fruit by the Chinese indicate that a thorough study of the various strains of this tree should be made. (Photographed by Wilson Popenoe, Oneco, Fla., August 19, 1914; P16166FS.)



FRUITS OF THE JAPANESE APRICOT, PRUNUS MUME SIEB. AND ZUCC., S. P. I. No. 28685. (SEE S. P. I. No. 41061.)

These exceedingly sour fruits, which resemble small greenish or yellow apricots and when perfectly ripe remind one of the American plum in flavor, are eaten in great quantities in Japan in the form of pickles and are said to have formed a portion of the army ration of the Japanese troops during the Russo-Japanese war, their effect being to quench the thirst. The fruits are pickled in brine with the leaves of the oil plant (*Perilla arguta*), which give them a reddish color and an aromatic taste. This apricot is the so-called "flowering plum," or "mume," of Japanese literature, and its extremely picturesque flowering branches are even more common on Japanese screens than are those of the famous flowering cherries. It is a greater favorite among Japanese poets than the cherry. It flowers so early that it is often caught by late snows and frost, and as few insects are flying at that time, it may need hand pollination. (Photographed June 22, 1915, from fruits sent from the Chico Field Station; natural size; P13508FS.)

41058 to 41061. Prunus spp. Amygdalaceæ.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received September 7, 1915.

41058 to 41060. Prunus serrulata sachalinensis (Schmidt) Makino. (*Prunus sargentii* Rehder.) **Sargent's cherry.**

41058. *Yamazakura* seeds from Koganei, near Tokyo.

41059. *Yamázakura* seeds from Arashiyama, Kyoto.

41060. *Yamazakura* seeds from Yoshino, Nara.

See S. P. I. Nos. 38761, 40190, and 40623 for previous introductions and description.

41061. Prunus mume Sieb. and Zucc. **Japanese apricot.**

"A deciduous tree of rounded habit, 20 to 30 feet high, with smooth, lustrous twigs. Leaves 2½ to 4 inches long, roundish or broadly ovate, contracted at the end into a long tapering point, sharply and often doubly toothed, with scattered hairs on both sides, becoming smooth except about the midrib beneath; leafstalk one-half to three-fourths inch long. Flowers pale rose, 1 to 1¼ inches across, produced singly or in pairs (each on a very short stalk) from the joints of the previous year's wood; petals broadly obovate; calyx one-half inch across, with oblong rounded lobes. Fruit described as yellowish, globose, 1 to 1¼ inches wide, scarcely edible; shell of nut perforated. Native of Korea and perhaps China. It is much cultivated in Japan for ornament, and the double-flowered form was originally introduced to Europe from that country by Messrs. Baltet, of Troyes, in 1878. It was first distributed as '*P. myrobalana, fl. pleno.*' a name which still clings to it in many places. It is a true apricot, not a plum. In late years it has been imported from Japanese nurseries in quantity and in various forms; of these the following are now in our gardens: *Alba* (white), *alba plena* (double white), *flora plena* (double rose), *pendula* (weeping). The flowers are delicately perfumed. This apricot is very valuable in gardens, especially the double-flowered forms, for its early, profuse flowering, being in bloom generally about the same time as the almond, and at its best almost as beautiful. It should be given a sheltered place. It can be distinguished from the common apricot by the longer, more slender apex to the leaf." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 244.*)

"The pickled *mume* fruits form part of the army ration of the Japanese soldier. They are among the sourest things known. The trees are hardy at Washington, and some varieties flower in February." (*Fairchild.*)

See S. P. I. Nos. 9211 to 9216, 28685, and 34582 for previous introductions.

For an illustration of the fruits of this apricot, see Plate IV.

41062. Garcinia mangostana L. Clusiaceæ. **Mangosteen.**

From Manila, Philippine Islands. Presented by the director, Bureau of Agriculture. Plants received July 22, 1915.

See S. P. I. No. 25887 for description.

41063. Oryza sativa L. Poaceæ. **Upland rice.**

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunnicut, director, Escola Agricola de Lavras, through Mr. C. C. Knight, vice director. Received August 5, 1915.

"I do not know the name of the variety of this rice, as they do not pay much attention to varietal names here. However, this past year was very hard for upland rice, as we had a protracted drought of six weeks, but this rice made a crop. Another variety grown in the same field failed to make a crop." (*Hunnicut.*)

41064 to 41087. TRITICUM spp. Poaceæ. **Wheat.**

From Sydney, New South Wales, Australia. Presented by Mr. George Valder, undersecretary and director, Department of Agriculture. Received August 26, 1915.

"The department's plant breeder states that the following varieties are winter wheats here, but if sown at the same season as such sorts in America they would probably be winterkilled. It is suggested that they be sown as spring wheat, with the exception of *Marster's Perfection* [S. P. I. No. 41072], which should stand the frosts of winter. It may be mentioned that samples of the ordinary varieties recommended to farmers in this country have invariably been sent abroad, and almost without exception have proved unsuitable for American and European conditions; it has been found that they either become eaten up with spring rust or do not survive the winters." (*Valder.*)

41064 to 41071. TRITICUM AESTIVUM L. **Wheat.**
(*Triticum vulgare* Vill.)

41064. No. 4. Very early; harvested 1913.

41065. No. 9. Very early; harvested 1913.

41066. No. 3. Very early; harvested 1914.

41067. No. 14. Midseason to early; harvested 1914.

41068. No. 8. Very early; harvested 1914.

41069. No. 11. Very early; harvested 1913.

41070. No. 2. Very early; harvested 1914.

41071. *Warren* (ordinary). Midseason; harvested 1914.

41072. TRITICUM TURGIDUM L.

Marster's Perfection (Poulard). Very late; harvested 1913.

41073 to 41087. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

41073. *Tarragon* (ordinary). Rather late; harvested 1914.

41074. *Sunset* (ordinary). Very early; harvested 1914.

41075. *Jumbuck Cross* (ordinary). Medium early; harvested 1914.

41076. *Canberra* (ordinary). Very early; harvested 1914.

41077. *Bomen* (ordinary). Medium early; harvested 1914.

41078. *Cleveland* (ordinary). Rather late; harvested 1913.

41079. *Hard Federation* (ordinary). Early; harvested 1913.

41080. *Federation* (ordinary). Midseason; harvested 1914.

41081. *Steinwedel* (ordinary). Early; harvested 1913.

41082. *Purple straw* (ordinary). Midseason; harvested 1914.

41083. *Cedar* (ordinary). Early; harvested 1914.

41084. *Cowra No. 16* (durum). Late, a beardless durum hybrid; harvested 1913.

41085. *Jonathan* (ordinary). Midseason; harvested 1914.

41086. *Florence* (ordinary). Early maturing; harvested 1914.

41087. *Thew* (ordinary). Early maturing; harvested 1914.

41088 to 41091. Citrus nobilis deliciosa (Tenore) Swingle. Rutaceæ. **Mandarin.**

From Redland Bay, Queensland. Presented by Mr. James Collins. Cuttings received September 9, 1915. Quoted notes by Mr. Collins.

41088. "*Excelsior* (hybrid). Tree robust, heavy cropper, no thorns, fruit large, skin tight, coarse while trees are young, very juicy, season late, good, color scarlet."

41089. "*Burrum Beauty* (hybrid). Tree robust, branches inclined to weep a little, good cropper, thorny, fruit very large, skin loose, quality fair, color scarlet."

41090. "*Coomber's Perfection* (true mandarin). Possibly the best mandarin grown, tree robust, upright grower, very thorny, not a very heavy cropper, fruit large, heavy, and firm, best quality."

41091. "*Ellendale Beauty* (hybrid). Tree robust grower, heavy cropper, fruit large to very large, firm and heavy, rather brisk flavor, good cropper, quality fair, color scarlet."

41092 to 41096. Chayota edulis Jacq. Cucurbitaceæ. **Chayote.**

From Kingston, Jamaica. Presented by Mr. William Harris, Hope Gardens. Fruits received September 9, 1915.

41092. Spiny green.

41093. Large smooth green.

41094. Medium-sized green.

41095. Small green.

41096. Long white.

41097 to 41123.

From Peru. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received September 8, 1915. Quoted notes by Mr. Cook.

41097. Xanthosoma sp. Araceæ.

"No. 1399. *Qquelluuncucha.* Amaybamba, Peru, June, 1915. A variety with small roots that are preserved by drying and are called *chuños*, like the potato dried by freezing in the high plateaus. This variety is not acrid like the other, and the foliage is often cooked for greens."

Tubers.

41098. Curcuma sp. Zinziberaceæ.

"No. 1442. *Palillo chuncho.* Santa Ana, Peru, July 8, 1915. A plant cultivated in the lower Urubamba Valley for its aromatic yellow-fleshed rootstocks which are used for coloring food. For this purpose *palillo* is considered superior to *annatto* and is an article of trade among the natives. To be raised for identification."

Rootstocks.

41099. Citrus sp. Rutaceæ. **Sweet lime.**

"No. 1667. Santa Ana, Peru, July 7, 1915. A large and very vigorous form of the sweet lime, a rather popular fruit in the Urubamba Valley."

Cuttings.

41100. Canna edulis Ker-Gawler. Cannaceæ. **Canna.**

"No. 1674. Santa Ana, Peru, July 8, 1915. Altitude, 3,000 feet. A cultivated variety, different from that found previously near Intihuatana, the tubers being green and white instead of red. The flowers are scarlet and somewhat larger than those of the other variety."

Rootstocks.

41097 to 41123—Continued. (Quoted notes by Mr. O. F. Cook.)

41101. XANTHOSOMA sp. Araceæ.

"No. 1678. Santa Ana, Peru, July 2, 1915. Var. *Qquelluuncucha*. Supposed to be the same as No. 1399 (S. P. I. 41097), but the tubers somewhat smaller and longer. Grown at an altitude of about 3,000 feet."

Tubers.

41102. FRAGARIA sp. Rosaceæ. **Strawberry.**

"No. 1767. San Miguel, Tocontoy, Peru, July 10, 1915. Plants of a wild strawberry grown at an altitude of about 8,000 feet."

41103. MANIHOT DULCIS (Gesner) Baillon. Euphorbiaceæ.
(*Manihot palmata* Muell. Arg.) **Sweet cassava.**

"No. 1768. *Yuca*. San Miguel, Peru, July 10, 1915. Cuttings of a seed-bearing native variety grown at the upper rim of the tropical belt at an altitude of 6,000 feet. For testing in the South and in California in comparison with the variety from Lima."

41104. OPUNTIA sp. Cactaceæ. **Spineless prickly-pear.**

"No. 1788. Tocontoy vicinity, Peru. A spineless form found by Prof. Hiram Bingham in the Urubamba Valley below Ollantaytambo. Of possible interest on account of the large size of the leaves, which are of a delicate texture and not unpleasant in taste. The spiny form is very common throughout the Urubamba Valley, being planted commonly for hedges."

Cuttings.

41105. ESCALLONIA MYRTILLOIDES L. f. Escalloniaceæ.

"No. 1827. *Tasta*. Pinasniocj, Peru, July 14, 1915. A tree related to the *Chachacoma*, but with much smaller leaves and more horizontal branches, giving the general appearance of a hemlock or other coniferous tree. Attains an altitude of 12,000 feet where heavy frosts are of nightly occurrence during the winter. Should be tested first along the Pacific coast."

Cuttings.

41106. SOLANUM sp. Solanaceæ.

"No. 1859. Pinasniocj, Peru, July 16, 1915. A native tree attaining a height of 20 to 25 feet and a diameter of 1 foot. Grows at an altitude of 11,000 to 12,000 feet, and flowers in the winter when frosts are of almost nightly occurrence. Blossoms in large clusters, angular bell shaped, pendent; yellowish outside, within rich violet with a network of fine yellow veins; peculiar and very attractive. May thrive on the Pacific coast."

Cuttings.

41107. (Undetermined.)

"No. 1861. *Masuca*. Pinasniocj, Peru, July 16, 1915. Willowlike shrub belonging to the family Melastomaceæ, with very handsome pendent flowers closely resembling those of Fuchsia. The calyx is red and the corolla deep blue. The branches are straight and upright and very tough, furnishing material for making baskets. The *masuca* comes from a high altitude where frosts are common and should be hardy enough to thrive along the Pacific coast, at least as far north as San Francisco."

Plants.

41097 to 41123—Continued. (Quoted notes by Mr. O. F. Cook.)

41108. (Undetermined.)

"No. 1862. Pinasniocj, Peru, July 16, 1915. *Masuca.* Same as 1861 [S. P. I. No. 41107], but from a different plant."

Plants.

41109. SOLANUM sp. Solanaceæ.

"No. 1860. Pinasniocj, Peru, July 16, 1915. Same as 1859 [S. P. I. 41106], but from a different tree with flowers of a somewhat deeper color."

Plant.

41110. EUGENIA sp. Myrtaceæ.

"No. 1863. Pinasniocj, Peru, July 16, 1915. Cuttings of an extremely beautiful tree, with fine glossy deep-green foliage contrasting with a smooth, light-colored, graceful trunk and branches. Should be tried, especially along the Pacific coast. Likely to become a general favorite if conditions prove favorable for its development. Should be easily propagated from cuttings. This material is from a selected tree of which photographs were taken."

41111. HESPEROMELES OBLONGA Lindley. Malaceæ.

"No. 1874. Pinasniocj, Peru, July 16, 1915. *Lengli.* A very attractive tree, with deep-green, hollylike foliage and clusters of red berries. Somewhat resembling our thorn-apple trees, Crataegus, but with much more handsome evergreen foliage. Should be of interest for the Pacific coast if it is found to thrive."

Plants.

41112. ESCALLONIA RESINOSA (R. and P.) Persoon. Escalloniaceæ.

"No. 1886. Pinasniocj, Peru, July 17, 1915. *Chachacoma.* A tree of ornamental value, producing clusters of white flowers for a long period during the winter months. The trees attain a height of 30 or 40 feet and a diameter of 2 to 3 feet. The wood is of excellent quality, having very little grain, and used especially for carving and household utensils. Should endure frosts and may prove useful, especially along the Pacific coast."

Cuttings.

41113. SOLANUM sp. Solanaceæ.

"No. 1890. Pinasniocj, Peru, July 17, 1915. *Quita naranjo.* A shrub attaining a height of 6 to 8 feet, with very tough wood. The habits of growth, the clean, fresh green foliage and clusters of white flowers all unite to give a remarkable resemblance to the orange tree. This is recognized in the native name, which means 'wild orange.' The plant should be of ornamental value in the open air in the warmer parts of the country and perhaps indoors."

Cuttings.

For an illustration of the *Quita naranjo*, see Plate V.

41114. BUDDLEIA INCANA Ruiz and Pavon. Loganiaceæ.

"No. 1892. Pinasniocj, Peru, July 16, 1915. *Quishuar.* A tree with grayish foliage somewhat resembling the olive, with rather attractive clusters of yellow flowers. It grows on the high table-lands of southern Peru where frosts are of frequent occurrence during the winter season. It grows rapidly and propagates readily from cuttings. The wood is

41097 to 41123—Continued. (Quoted notes by Mr. O. F. Cook.)

said to be very hard and durable. Of possible interest for ornamental planting or windbreaks in the coast district of southern California."

Cuttings.

41115. (Undetermined.)

"No. 1907. Ollantaytambo, Peru, July 19, 1915. *Panti.* A medicinal plant much used among the Indians and sometimes cultivated. Evidently a composite, with a tuberous root not unlike the *Yacon* (Polymnia), but smaller."

Roots.

41116. OPUNTIA sp. Cactaceæ.

"No. 1918. Ollantaytambo, Peru, July 20, 1915. Spineless or nearly spineless forms of this cactus are not uncommon in the Urubamba Valley."

Cuttings.

41117. SOLANUM sp. Solanaceæ.

"No. 1937. Cuzco, Peru, July 26, 1915. A shrub attaining a height of 6 to 8 feet, but flowering when only 3 to 4 feet high. The flowers of an attractive blue color are in clusters and borne through the winter, even in dry exposed places where severe frosts occur every night. Of interest on account of its extreme hardiness and of possible value as an ornamental along the Pacific coast and elsewhere."

Cuttings.

41118. CANNA sp. Cannaceæ. **Canna.**

"No. 1971. Below San Miguel, Peru, June, 1915. A species cultivated in the upper rim of the tropical belt at an altitude of about 6,000 feet."

Rootstock.

41119. XANTHOSOMA sp. Araceæ.

"No. 1676. Santa Ana, Peru, July 2, 1915. Var. *Huascamanuco.* A variety with deep pinkish flesh, one of the favorite sorts about Santa Ana."

Tubers.

41120. XANTHOSOMA sp. Araceæ.

"No. 1677. Santa Ana, Peru, July 2, 1915. Var. *Picauncucha.* A variety with large tubers and of good quality, but requires thorough cooking, as the flesh is said to be extremely acrid when raw."

Tubers.

41121. MANIHOT DULCIS (Gesner) Baillon. Euphorbiaceæ.
(*Manihot palmata* Muell. Arg.) **Sweet cassava.**

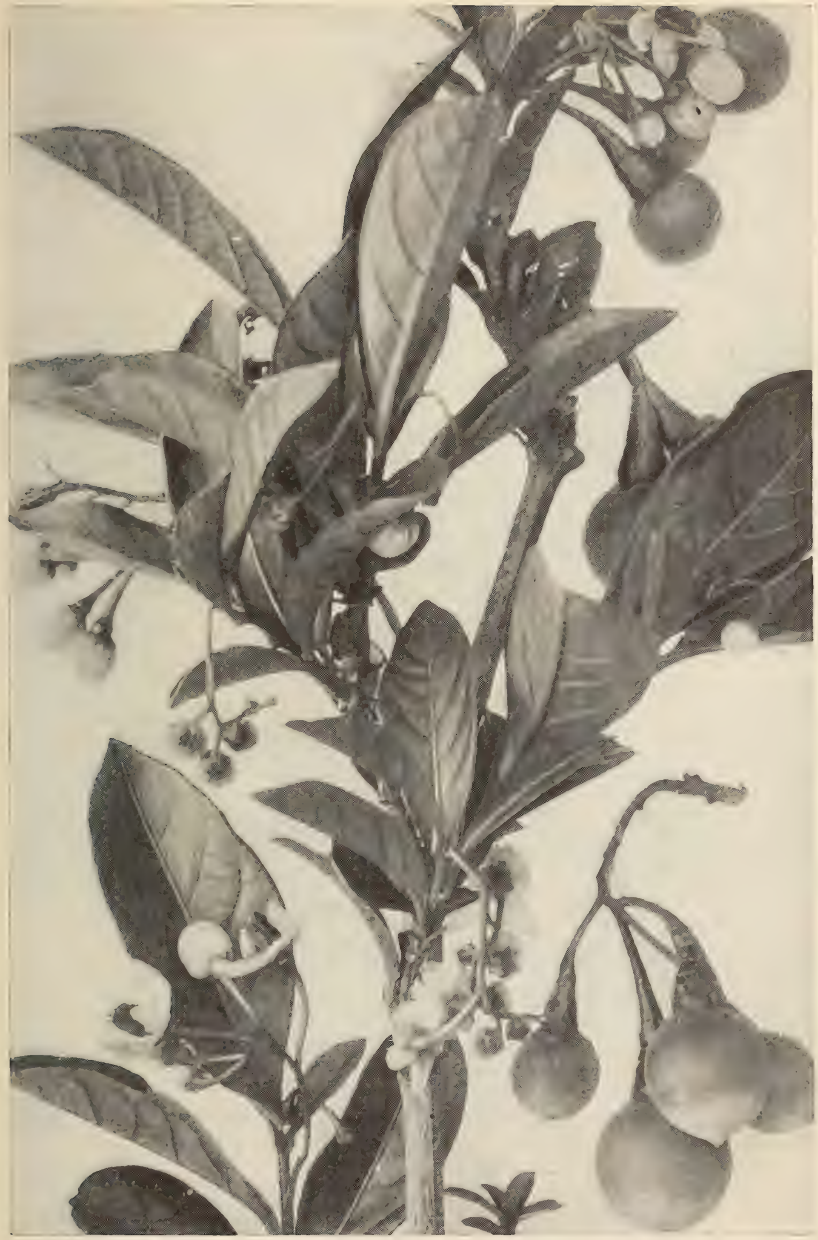
"No. 1680. Santa Ana, Peru, July 6, 1915. *Yuca.* A native seed-bearing variety of cassava grown at an altitude of 3,000 feet. For experimental planting in the South and possibly in California."

Cuttings.

41122. MANIHOT DULCIS (Gesner) Baillon. Euphorbiaceæ.
(*Manihot palmata* Muell. Arg.) **Sweet cassava.**

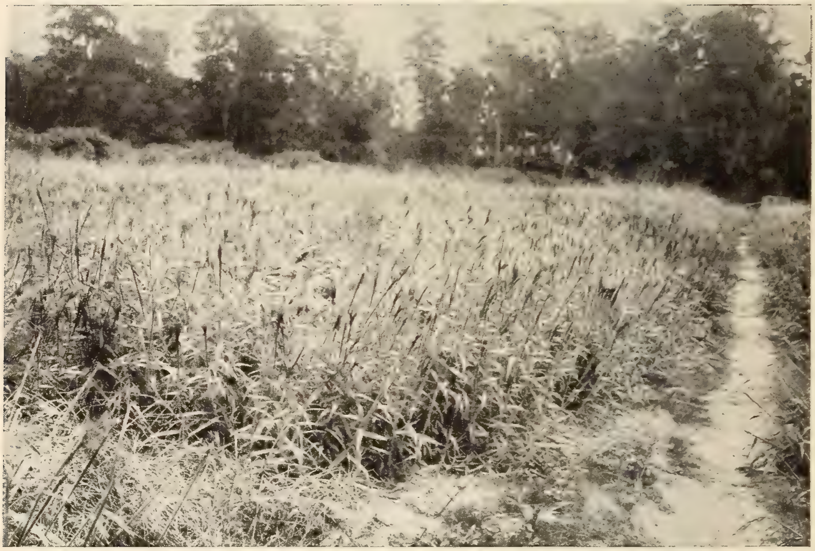
"No. 1973. Lima, Peru, August 17, 1915. *Yuca.* A variety grown along the coast between Lima and Callao, in a rather cool climate. Should be tested in California, as well as in the Southern States."

Cuttings.



THE QUITA NARANJO, SOLANUM SP., AN ORNAMENTAL SHRUB FROM THE MOUNTAINS OF PERU. (SEE S. P. I. NO. 41113.)

The clean, fresh foliage, the clusters of white flowers, and the globular fruits with the habit of growth unite to give this Solanum a remarkable resemblance to the orange tree. It is a shrub attaining a height of 6 to 8 feet, and because of its ornamental value should be tried in the mild-wintered portions of the United States, and perhaps also as a greenhouse shrub. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Ollantaytambo, Peru, May 18, 1915; natural size; P18110CA.)



A FIELD OF MOLASSES GRASS, MELINIS MINUTIFLORA BEAUV., S. P. I. NO. 28768, FROM BRAZIL. (SEE S. P. I. NO. 41148.)

A South African grass, commonly cultivated in Brazil, which has grown well in Florida and elsewhere in the Gulf States. It is said to be eaten greedily by cattle and horses, because of the sticky secretion on the blades, which is said to amount to as much as 3.22 per cent of the dry digestible matter. In the field it is of a purplish color, the sticky secretion sometimes being so evident as to look like frost on the leaves, leading observers to believe that the grass was frost resistant. (Photographed at the Gainesville, Fla., Experiment Station, by Peter Bisset, November 14, 1912; P10391FS.)

41097 to 41123—Continued. (Quoted notes by Mr. O. F. Cook.)

41123. CANTUA BICOLOR Lem. Polemoniaceæ.

"No. 1934. Ollantaytambo, Peru, July 25, 1915. Cuttings of a wild plant found about 1 league from Huarocondo, along the road from Ollantaytambo. The flowers are somewhat smaller and lighter in color than those of the cultivated *Cantua buxifolia*."

Cuttings.

41124. CITRUS NOBILIS DELICIOSA (Tenore) Swingle. Rutaceæ. **Tangerine.**

From Brazil. Presented by Rev. A. J. Holt, Kissimmee, Fla., who secured the seeds from Rev. R. E. Pettigrew, Paranagua, Brazil. Received September 10, 1915.

"Seeds of the Brazilian tangerine. Mr. Pettigrew tells me that these are from the finest tangerine that grows, that it is as large as a grapefruit and sells in New York at 25 cents each." (*Holt.*)

41125 to 41127. ORYZA SATIVA L. Poaceæ. **Rice.**

From Sao Paulo, Brazil. Presented by the Director de Agriculture e Industria Pastoril. Received August 13, 1915.

41125. No. 1. *Arroz agulha peludo* (hairy needle rice).

41126. No. 2. *Catete dourado* (golden catete).

41127. No. 3. *Arroz Valenciano* (Valencia rice; Bomba 10 Extra Florete).

41128. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Dominica, British West Indies. Presented by Mr. Joseph Jones, curator, Botanic Gardens. Fruits received September 12, 1915.

See S. P. I. No. 25887 for previous introduction and description.

41129. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Naples, Italy. Presented by Mr. Jay White, American consul. Received September 8, 1915.

"Freestone peach seed of a variety known locally as *Mala Rosea* and grown in Sorrento, Italy, by Signor Casagrande. The fruit is considered one of the best varieties of table peaches grown in the vicinity of Naples." (*White.*)

41130 to 41132. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Foochow, China. Presented by Mr. Albert W. Pontius, American consul. Received September 7, 1915. Quoted notes by Mr. Pontius.

41130. "*Hung chiang* or 'red peach.' The season for ripening is from the early part of May to the middle of June."

41131. "*Pai chiang* or 'white peach.' Ripening from June to the end of July."

41132. "*Kuang ying* peach. Ripens from July to the middle of August. This is the smallest variety of the three."

41133. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bael fruit.**

(*Aegle marmelos* Correa.)

From Gujranwala, India. Presented by Rev. H. S. Nesbitt, manager, Boys' Industrial Home. Fruits received September 11, 1915.

"Five large specimens which are more rare here and four little scrub specimens which are the wild kind that grow in the jungles. They are sought for by camel owners, who ascribe some virtue to them and periodically feed them to their camels. They are so hard that they require to be broken under a hammer or a stone." (*Nesbitt.*)

41134. PIMENTA OFFICINALIS Lindley. Myrtaceæ. **Allspice.**

From Kingston, Jamaica. Presented by Mr. W. Harris, superintendent, Hope Gardens. Received September 9, 1915.

"A small tree with smooth, white bark, 25 to 30 feet high, native of the West Indies and Central America. The dried unripe berries, which are the size of small peas, are the allspice or pimento of commerce. The name 'allspice' is due to a supposed resemblance of the spice to a combination of the odour and flavor of cinnamon, nutmeg, and cloves. The tree was introduced into Ceylon over a century ago and established at Peradeniya, where it flowers in dry weather and occasionally sets a few fruits, but outside the Botanic Gardens it is rarely met with in this country. It is considered to yield best in a hot and rather dry climate, and prefers a loose loamy or alluvial well-drained soil. In Jamaica the berries are picked by hand while green but just ripe, and are then dried in the sun, the latter process taking six to ten days. The fruits are known to be sufficiently dry when the seeds rattle on shaking and are a dark colour. A crop can not be expected within six or seven years from the time of planting, and when in full bearing a tree will yield a hundredweight of the dried spice. Jamaica is the only country that exports this spice, which is sold at present in England at about 2d. to 3d. per pound." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

41135 to 41141.

From San Jose, Costa Rica. Presented by Mr. J. E. Van der Laat, director, Department of Agriculture, through Mr. Carlos Wercklé. Received September 13, 1915. Quoted notes by Mr. Wercklé.

41135 to 41140. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**

"We have here a few exceptionally good varieties of the chayote, but, very strange, they are seldom found in the market; the variety called *chayota zapayo* (*zapayo* means squash), which is simply enormous, I have never seen elsewhere than in Tarras, a little village near Cartago. There is a form of the *cocora*, quite small, but very prolific, which has nothing of the fibrous felt around the seed (endocarp). The dark-green varieties produce more tubers than the light-colored ones; in the cold highlands (where the chayote does best) they take from a single plant as much as 100 pounds of roots every year. The plant grows and produces fruit also in the torrid lowlands, but it produces nearly no tubers. We have here some round fruits (nearly spherical)."

41135. Small white.
41136. Spiny white.
41137. Large light green.
41138. Large white.
41139. Large dark green.
41140. Large light green.

41135 to 41141—Continued. (Quoted note by Mr. C. Wercklé.)

41141. Polakowskia tacaco Pittier. Cucurbitaceæ. **Tacaco.**

"The *tacaco* is not of a perishable nature, as the chayote; it has a hard skin when ripe and keeps in perfect condition for weeks; at last it shrivels and in this state it is planted. The fruits for planting are chosen from those which fall off the vine when dead ripe. They can not be planted in the soil; they do not sprout. The best way is to bury them in rotting leaves on the earth, with a layer of dead leaves on them."

Fruits.

41142. Amygdalus persica L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Swatow, China. Presented by Mr. G. C. Hanson, American consul. Received September 14, 1915.

"The two common strains of peaches in the vicinity of Swatow are locally called the cling and the free varieties. There is also a third variety of a hard and bitter nature, not edible except when preserved. This, the free strain, named so because the flesh does not adhere to the stone, ripens about the middle of July. It is a sweet peach and a better fruit than the cling variety. The seeds of this peach are used for medicinal purposes by the Chinese. The peaches grown here are greatly inferior to the American varieties. Peaches raised from the seeds are natural fruits, which are small and tasteless. The trees need to be budded before the edible peach can be produced." (*Hanson.*)

41143. Cacara erosa (L.) Kuntze. Fabaceæ. **Yam bean.**
(*Pachyrhizus angulatus* Rich.)

From Calcutta, India. Presented by Mr. H. G. Carter, economic botanist, Botanical Survey of India Department, Indian Museum. Received September 7, 1915.

"*Sankalu.*"

See S. P. I. No. 38665 for previous introduction and description.

41144 to 41146. Oryza sativa L. Poaceæ. **Rice.**

From Sao Paulo, Brazil. Presented by the Director de Agriculture e Industria Pastoril. Received September 13, 1915.

41144. No. 1. *Arroz Goyano* (rice from Guiana).

41145. No. 2. *Arroz Jaguary* (rice from Jaguary, Minas Geraes).

41146. No. 3. *Agulha* (needle), from the littoral (Iguape).

41147 and 41148.

From Macuco, Estado do Rio, Brazil. Presented by Mr. T. R. Day. Received September 13, 1915.

41147. Carica papaya L. Papayaceæ. **Papaya.**

"*Mamão* (pronounced *mammong* very nearly, with accent on the second syllable) appears to be the same as the papaya of India, but the fruit here, like that of the Brazilian mango, is superior to the Indian varieties we have encountered, although it is not so much esteemed here as it is by the natives in India. These seeds are of an unusually good variety, and we think that if not already introduced or experimented with, it is well worth a trial in the United States in sheltered places where there is practically no winter. It will grow in any soil and fruits within twelve

41147 and 41148—Continued.

months, continuing in bearing for some four or five years. Among other uses it serves as a very good shade tree for young fruit plantations of tender varieties, as it is such an extraordinarily rapid grower and is very easily cut out when it has served its part." (*Day.*)

41148. MELINIS MINUTIFLORA Beauv. Poaceæ. **Molasses grass.**

"There are two grasses here that are worthy of special mention, the doubt as to adaptability being with regard to the winters in the Southern States, which I understand are in some places fairly severe. They are called *Capim gordura roxa* [molasses grass] and *Capim jaraguá*. *Capim gordura roxa* means literally 'greasy purple grass.' I have seen *Capim gordura roxa* live down the wild fern that is such a plague in some districts, and it forms (where not pastured) a dense carpet between 3 and 4 feet thick, upon which it was almost possible to walk. Riding or walking through it in the pasture under normal conditions, the proportion of wax and grease on the blades is sufficient to thoroughly clean and polish one's boots; this is no exaggeration, but is often remarked. It is not a watery grass, but unusually palatable to cattle and horses, and the blades secrete a wax or grease that, according to one analysis, totals as much as 3.22 per cent of the dry digestible matter. It is perceptible to the fingers, which it makes quite sticky. I have not met it in any other country, and I believe that it is indigenous to the central part of Brazil, not thriving right down in the south nor in the sandier coast States of the north. It is a fairly good drought resister and comes up fairly well again after a fire. There is a related variety called *Capim gordura blanco* (blanco means white), of a bright emerald-green color, but without the resistance of the *roxa*, and also not stooling so well. I have found both of the above grasses growing away from the sea level up to 2,000 meters on Caparao, the highest mountain of Brazil, and I have found it at 1,000 meters living down wild fern; both these altitudes are subject to frosts, and I have also ridden through it on the uplands of Minas Geraes coated with a dense white frost." (*Day.*)

For an illustration of a field of molasses grass, see Plate VI.

41149. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Chungking, China. Presented by the American consul. Received September 14, 1915.

"Seeds of two different strains of peaches which are commonly cultivated in this vicinity. These peaches are locally known under the names of *Hsiang t'ao*, or fragrant peach, and *Chieh t'ao*, or firm peach. The *Hsiang t'ao* is a large peach and its skin and meat are partly red. It becomes soft when ripe, and the seed is readily extracted. It has a very delicious flavor. The *Chieh t'ao* is slightly smaller in size than the *Hsiang t'ao* and when ripe its meat is still quite firm. This peach ripens in this climate during the latter part of June, while the *Hsiang t'ao* ripens about a fortnight earlier. This is also a very finely flavored peach, but, however, not quite so sweet as the other one. A point that I should like to call attention to is the comparative freedom of these peaches from imperfections, a fact which is noteworthy in view of an absence of pest-preventive measures." (*Myrl S. Myers.*)

The seeds of these two varieties were accidentally mixed; therefore only one number was assigned.

41150. RHEEDIA BRASILIENSIS (Mart.) Pl. and Tr. Clusiaceæ. **Pacuri.**

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received September 13, 1915.

See S. P. I. 37802 for previous introduction and description.

41151. PANAX QUINQUEFOLIUM L. Araliaceæ. **Ginseng.**
(*Aralia quinquefolia* Decne. and Planch.)

From Mukden, China. Presented by Mr. P. S. Heintzleman, American consul. Received September 16, 1915.

"Owing to unfavorable climatic and soil conditions in the district immediately surrounding Mukden, ginseng is not grown here; however, I have succeeded in securing a small quantity. This plant is harvested during October in the outlying district of Fengtien Province." (*Heintzleman.*)

41152. HORDEUM VULGARE COERULESCENS Seringe. Poaceæ. **Barley.**

From Amoy, China. Presented by Mr. L. Maynard, American consul. Received August 20, 1915.

"Barley grown in the Province of Amoy and locally known as the '*Black Rice* variety.'" (*Maynard.*)

41153. HORDEUM DISTICHON NUDUM L. Poaceæ. **Berley.**

From Lyallpur, Punjab, India. Presented by Mr. D. Milne, economic botanist, Department of Agriculture, through Mr. Wynne Sayer, assistant to the Agricultural Adviser to the Government of India, Pusa, India. Received July 22, 1915.

Subvar. *ianthinum.* Two-rowed, huskless, purple, naked variety.

41154. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Pretoria, Transvaal, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Cuttings received September 13, 1915.

"*Uba* sugar cane. From Winklespruit Experiment Farm, Natal." (*Evans.*)

41155 to 41162. HORDEUM spp. Poaceæ. **Barley.**

From Cawnpore, United Provinces, India. Presented by Mr. H. M. Leake, economic botanist. Received June 15, 1915. Quoted notes by Mr. Leake.

41155. HORDEUM DISTICHON NUDUM L.

"No. 128. Two-rowed huskless, from Bulandshahr."

41156. HORDEUM VULGARE COELESTE L.

"No. 27. Six-rowed huskless, from Dehra Dun."

41157. HORDEUM VULGARE HIMALAYENSE Rittig.

"No. 359. From Gorakhpur."

41158 to 41161. HORDEUM VULGARE L.

41158. "No. 25. Six-rowed, from Naini Tal."

41159. "No. 222. Six-rowed, from Bareilly."

41155 to 41162—Continued. (Quoted notes by Mr. H. M. Leake.)

41160. "No. 48. Six-rowed, from Kheri."

41161. "No. 59. Six-rowed, from Kheri."

41162. HORDEUM VULGARE VIOLACEUM Körn.

"Red barley. Six-rowed, from Cawnpore Farm."

41163. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Buenos Aires, Argentina. Presented by Mr. W. D. Backhouse, through Mr. W. F. Wight, of the Bureau of Plant Industry. Tubers received September 6, 1915.

"From a few miles southeast of La Plata, in the Province of Buenos Aires, at a few meters' altitude above a lagoon, on land that had never been cultivated. The potatoes grew in small patches and the tubers were surprisingly good. Though this species flowers very profusely, it apparently does not seed. I had a patch isolated and inclosed some hundred plants, and not one seed was obtained. The tubers are by no means plentiful, either. The whole patch only gave about a kilo, and the biggest was about 2 inches in diameter." (*Backhouse.*)

41164. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Tsama melon.**

From Johannesburg, Union of South Africa. Presented by Mr. J. Burtt Davy, botanist, Agricultural Supply Association. Received September 20, 1915.

"I have been able to get in touch with a gentleman living in the Kalahari Desert who is able to secure the true *Tsama* melon, which grows about 250 miles farther west than his place. I do not know whether you are aware that it is extremely difficult to get the true article from the Kalahari, owing to the fact that the natives have an intense dislike to letting the seed leave the country and are up to all kinds of tricks to prevent it. Much of the so-called *Tsama* that appears in South Africa is the common *Kafir* melon or *Manketaan*, which appears to be far less drought resistant and not nearly so serviceable for desert regions." (*Davy.*)

This is the remarkable forage melon of the Kalahari, which furnished much of the feed for the huge herds of wild animals formerly pasturing there.

41165. LILIUM PHILIPPINENSE Baker. Liliaceæ. **Benguet lily.**

From Manila, Philippine Islands. Presented by the director, Department of Agriculture. Bulbs received September 24, 1915.

41166. (Undetermined.)

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received September 30, 1915.

41167. CACARA EROSA (L.) Kuntze. Fabaceæ. **Yam bean.**
(*Pachyrhizus angulatus* Rich.)

From Buitenzorg, Java. Presented by the director, Department of Agriculture. Received September 28, 1915.

'*Bangkoewang.* This variety is the only one cultivated by the natives here." (*The Director.*)

See S. P. I. Nos. 38665 and 41143 for previous introductions and description.

41168 to 41243.

From Peru. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received September 16, 1915. Quoted notes by Mr. Cook.

41168 to 41176. OXALIS TUBEROSA Molina. Oxalidaceæ. **Oca.**

"A plant related to our common sheep sorrel, widely cultivated in Peru and Bolivia for the sake of its fleshy rootstocks, which are an important article of food. In some districts ocas are second only to potatoes, while in others ullucus are more important, or at least are sold more generally in the native markets. Ocas are eaten raw as well as cooked, and are also frozen and dried. Ocas prepared in this way are called *caya*, a term corresponding to *chuño* (*chunyo*), the name of the dried potatoes. Raw ocas when first dug have a distinctly acid taste, like sheep sorrel, but this is lost after the tubers have been exposed to the sun. The plant attains a height of 1 foot or more and has the general appearance of a large sheep sorrel. The flowers are yellow and the leaflets are folded at night or in wet weather, the same as sheep sorrel. The varieties are numerous, though much fewer than in the case of the potato. Some are preferred for eating raw and others for the making of *caya*. The texture of the tubers is very tender, crisp, and juicy. In form some are nearly cylindrical, while others are slender at the base and strongly thickened at the end. The colors vary from white or light pink through darker pinks or yellows to deep purplish red. The range of colors is much the same as in the *ullucu*, but no deep-yellow varieties were seen, nor any with spots, except that some have bands of deeper color across the eyes. In addition to the pleasing coloration, the surface of the tubers is smooth and clear, so that the general appearance is very attractive. If the taste should prove acceptable, ocas might become very popular for salads and pickles, if not for other purposes. The nature and habits of the plant indicate that it may be adapted to acid soils, which would be a distinct advantage in some parts of the United States."

Tubers.

41168. "No. 2021. Ollantaytambo, Peru, June 16, 1915. *Zapallo* oca. Pale yellow color of squash, with deep red bands across eyes; large specimens 8.5 cm. by 4 cm."

41169. "No. 1223. Ollantaytambo, Peru, June 16, 1915. *Higos* oca."

41170. "No. 2033. Sicuani (Ushcopata), Peru, April 9, 1915. Ten tubers in one hill."

41171. "No. 2026. Sicuani, Peru, April 4, 1915. *Hanccolema.* White variety, scarcely pinkish at the ends. More slender than the *papa* oca."

41172. "No. 2030. Sicuani, Peru, April 9, 1915. *Cachu* oca. Smaller and more slender than the others (*papa* oca, No. 2025, and *hanccolema*, No. 2026), and eyes not so close set. Pinkish all over, but much lighter than the preceding. Considered better for eating raw."

41173. "No. 2032. Sicuani (Ushcopata), Peru, April 9, 1915. *Yuracj* oca. At Ushcopata, a few miles above Sisuani, two more kinds of ocas were found, a reddish variety, smaller than *papa* oca, called *pocalluchu*, and a white variety, with very broad fasciated stems, called *yuracj* oca."

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41174. "No. 2034. La Paz, Bolivia, August 4, 1915. A white variety, pinkish at the eyes and at the tips. Strongly thickened at the end, like the red variety, but the eyes closer together."

41175. "No. 2035. La Paz, Bolivia, August 4, 1915. A uniform pink variety, in form nearly cylindrical."

41176. "No. 2036. La Paz, Bolivia, August 4, 1915. A deep red variety, strongly thickened at the end. Eyes rather remote."

For illustrations of oca plants showing rootstocks, see Plates VII and VIII.

41177 to 41184. ULLUCUS TUBEROSUS Caldas. Basellaceæ. **Ullucu.**

"The *ullucu* or *papa lisa* is a root crop raised generally in the highlands of Peru and Bolivia, in the region where potatoes are grown. The tubers have a remarkably close resemblance to potatoes, except that the skins are smoother and the colors brighter, running from white through various intermediate shades to deep yellows and reds. There are also spotted varieties, white and pink or light yellow and pink. Judging from its representative in the native markets, the *papa lisa* ranks next to the potato in popular favor in Peru, being used largely in the making of soups, which is the principal branch of the culinary art among the Indians. The flavor of the *papa lisa* is peculiar and usually not attractive to the unaccustomed palate. But being one of the plants that accompany the potato in Peru, it may not be without interest to observe its behavior in the United States. The tubers are produced in abundance, and if the plant should be found to grow readily the possibilities of utilization should be carefully studied. The plant is a relative of the so-called Madeira vine, familiar in cultivation as an ornamental climber. A wild *ullucu*, common in the region of Sicuani, is very similar to the Madeira vine, but the plants of the cultivated varieties do not attain a length of more than 2 or 3 feet. The general appearance and habit of growth are also somewhat like those of the sweet potato."

41177. "No. 2027. Sicuani, Peru, April 9, 1915. *Papa lisa.* Yellow, spotted with pink."

41178. "No. 2028. Ushcopata, a few miles above Sicuani, Peru, April 9, 1915. *Papa lisa.* Yellow, size very variable, sprouts light pink."

41179. "No. 2038. Cuzco, Peru, April 18, 1915. *Papa lisa.* Small round yellow or yellowish pink variety."

41180. "No. 2039. Cuzco, Peru, April 18, 1915. *Papa lisa.* Long, pinkish purple, enlarged at the base. Sprouting mostly at the tip. Sprouts dark pink, thick."

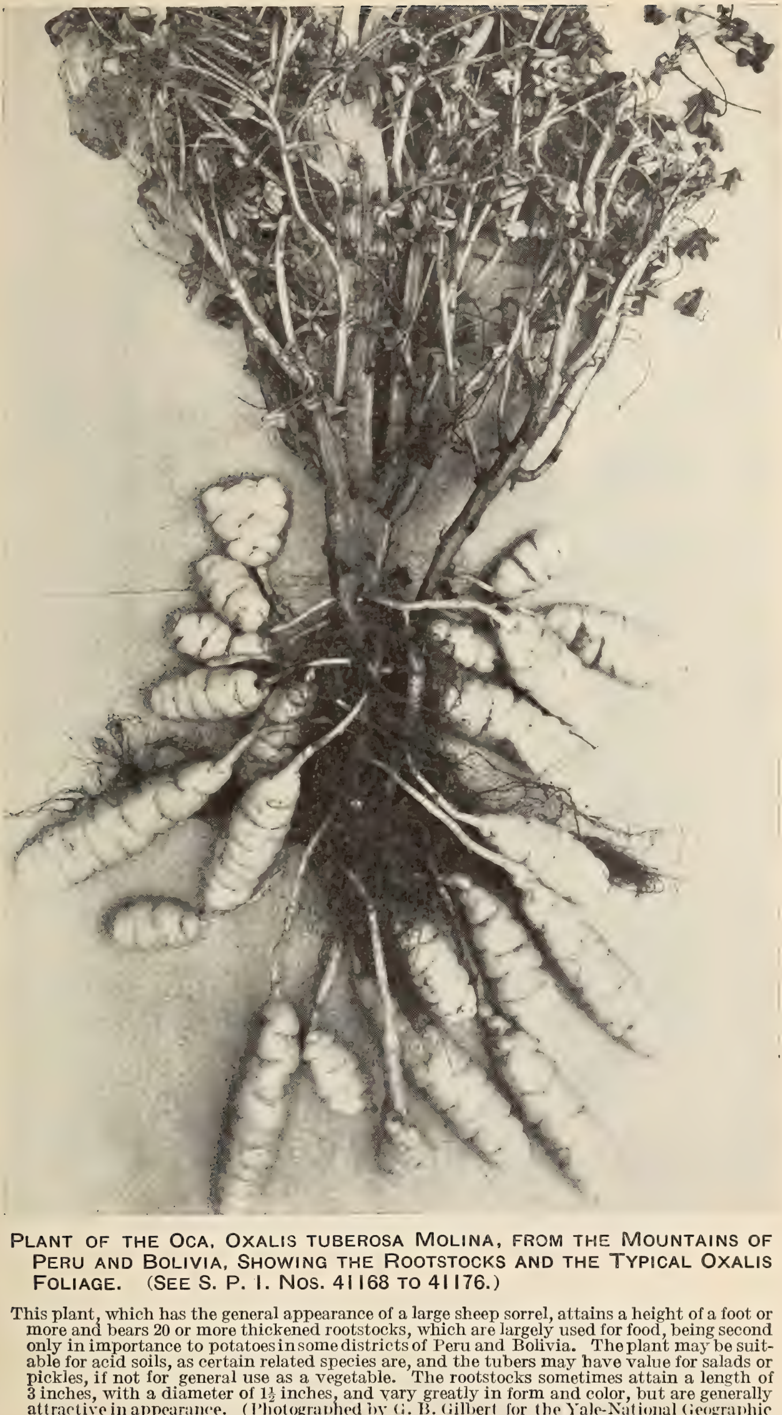
41181. "No. 2040. Cuzco, Peru, April 18, 1915. *Papa lisa.* White variety, elongated form. Sprouting from upper end."

41182. "No. 2041. Cuzco, Peru, April 18, 1915. *Papa lisa.* White variety, with pink blotches, rounded form. Uniform in shape. Well sprouted, slightly withered."

41183. "No. 2043. Lima, Peru, August 17, 1915. Color, pale greenish yellow; the largest variety of *ullucu* seen in Peru."

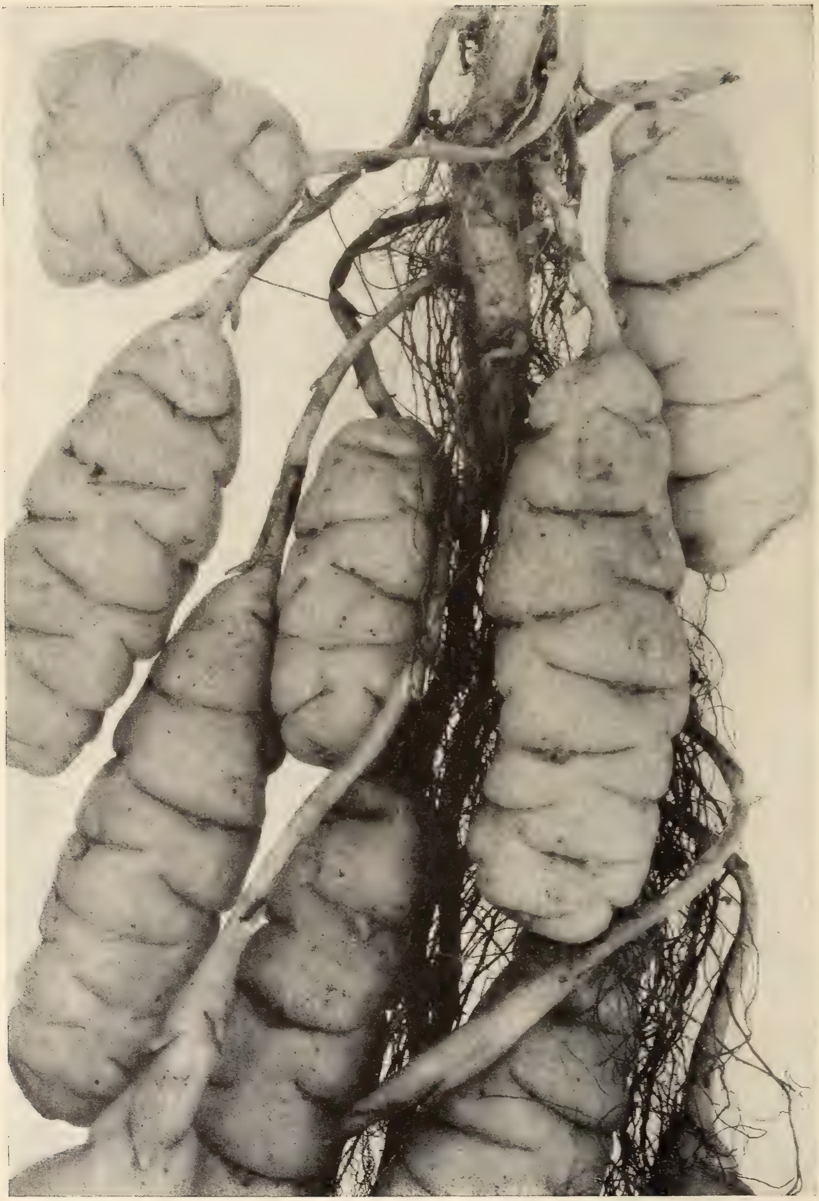
41184. "No. 2044. Lima, Peru, August 17, 1915. Color, deep pinkish yellow. Tubers large and broad."

For an illustration of the ullucu, see Plate IX.



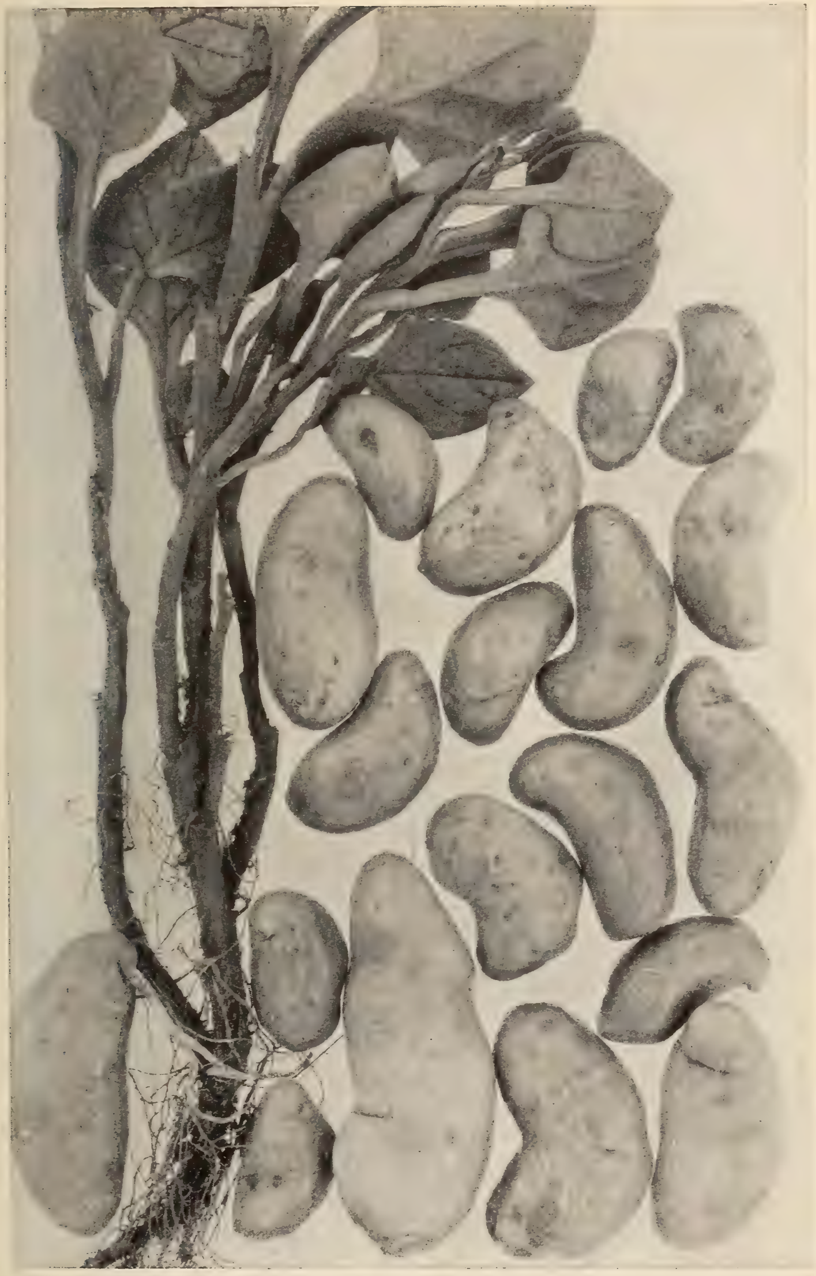
PLANT OF THE OCA, OXALIS TUBEROSA MOLINA, FROM THE MOUNTAINS OF PERU AND BOLIVIA, SHOWING THE ROOTSTOCKS AND THE TYPICAL OXALIS FOLIAGE. (SEE S. P. I. NOS. 41168 TO 41176.)

This plant, which has the general appearance of a large sheep sorrel, attains a height of a foot or more and bears 20 or more thickened rootstocks, which are largely used for food, being second only in importance to potatoes in some districts of Peru and Bolivia. The plant may be suitable for acid soils, as certain related species are, and the tubers may have value for salads or pickles, if not for general use as a vegetable. The rootstocks sometimes attain a length of 3 inches, with a diameter of $1\frac{1}{2}$ inches, and vary greatly in form and color, but are generally attractive in appearance. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Sicuani, Peru, April 10, 1915; about one-fourth natural size; P17751CA.)



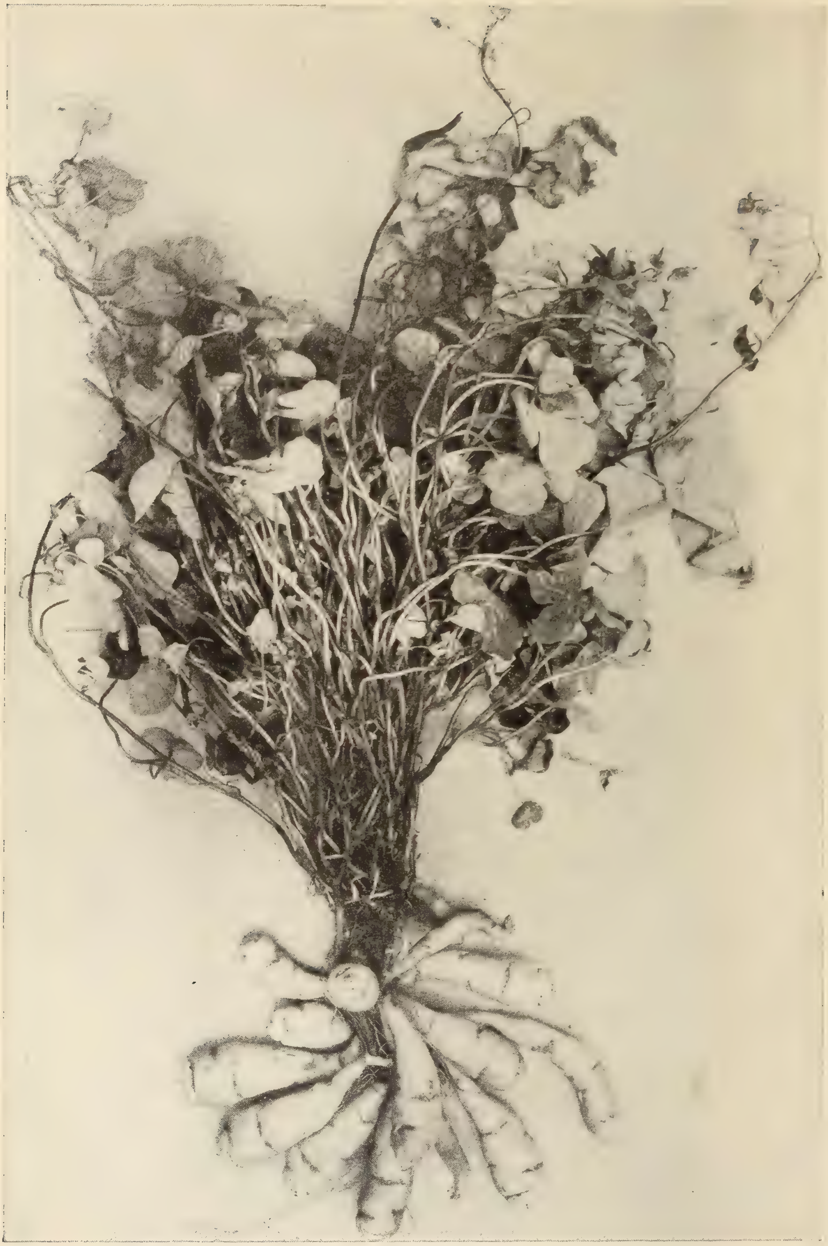
ROOTSTOCKS OF THE OCA, OXALIS TUBEROSA MOLINA, A VEGETABLE FROM THE ANDES OF PERU AND BOLIVIA. (SEE S. P. I. NOS. 41168 TO 41176.)

Ocas are eaten raw as well as cooked and also when frozen and dried. The tubers are tender and crisp, but juicy, and when first dug have a distinctly acid taste, which is lost on exposure to the sun. The color varies from white to light pink and through darker pinks and yellows to deep purplish red. The surface of the tubers is smooth, so that in general appearance they are very attractive. In form, some tubers are nearly cylindrical, while others are slender at the base, becoming strongly thickened at the apex. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Santa Rosa, Peru, April 12, 1915; natural size; P17783CA.)



THE ULLUCU, ULLUCUS TUBEROSUS CALDAS, ONE OF THE MOUNTAIN ROOT CROPS OF PERU AND BOLIVIA. (SEE S. P. I. NOS. 41177 TO 41184.)

In Peru the ullucu, or papa lisa, ranks next in popularity to the potato, being used largely in making soups. The tubers resemble the potato very closely, except that the skins are smoother and the colors brighter, running from white through various intermediate shades to deep yellows and reds. There are also varieties spotted white and pink or light yellow and pink. The flavor is peculiar and may not be attractive to American palates, but as the tubers are produced in abundance, the possibilities of utilization should be carefully studied. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Santa Rosa, Peru, April 12, 1915; natural size; P17784CA.)



PLANT OF THE ANYU, TROPAEOLUM TUBEROSUM RUIZ AND PAVON, A PERUVIAN MOUNTAIN ROOT CROP. (SEE S. P. I. NOS. 41185 AND 41186.)

This rather close relative of the ordinary nasturtium of our gardens is cultivated in the plateau region of Peru for its tubers, which are eaten like potatoes, ocas (*Oxalis tuberosa* Molina), and ullucus (*Ullucus tuberosus* Calder), but chiefly in the form of soups. The tubers are unusually good keepers, some having reached Washington in good condition in mid-September which were collected in early April. They are of at least two forms, one with short coarse purple stripes mostly near the very deep eyes, and the other with larger stripes of a lighter color. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Sicuani, Peru, April 10, 1915; about one-fourth natural size; P17749CA.)

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41185 and 41186. TROPAEOLUM TUBEROSUM Ruiz and Pavon. Tropæolaceæ. **Anyu.**

"One of the Andean root crops, generally cultivated in the potato-growing districts of the plateau region of Peru. Though apparently less popular than the *oca* and *ullucu*, the *anyu* has one important advantage over all the Peruvian root crops, including the potato, in its keeping qualities. Specimens collected in the district of Sicuani on April 9 were kept for three months at Ollantaytambo and then brought to Washington, and were still in good condition the middle of September. This means that the *anyu* tubers would be very easy to handle commercially in case they should prove to be of use in the United States. In Peru they are eaten like potatoes, *papa lisas*, and *ocas*, chiefly in the form of soups. The *anyu* plant is a rather close relative of another Peruvian species, *Tropaeolum majus*, a familiar ornamental cultivated in the United States under the name nasturtium. Hybrids between these two species might be of interest as affording a possibility of securing ornamental varieties that could be propagated from tubers. The flowers of *T. tuberosum* are not so large as those of *T. majus* and do not open so widely, but in other respects the general appearance is much the same. Experimental plantings of *anyu* should be made in the elevated districts in the Southwestern States and along the Pacific coast. In comparison with potatoes there appear to be very few varieties of the *anyu*."

41185. "No. 2024. Ollantaytambo, Peru, June 15, 1915. *Cheojche añu.* Spotted *anyu.* Strikingly marked with purple stripes, especially about the eyes. Two forms are found, one with short, coarse stripes, mostly confined to the vicinity of the eyes, which are very deep, with the surface very prominent between the eyes, making the outline very irregular. The other form has larger stripes of a somewhat lighter color. These are called *Pucacheojche*; the other *Yanacheojche*, or black striped.

41186. "No. 2031. Ushcopata, Sicuani, Peru, April 9, 1915. *Qquello* or yellow *anyu.* From Ushcopata, a few miles above Sicuani."

For an illustration of an anyu plant, see Plate X.

41187. CANNA EDULIS Ker-Gawler. Cannaceæ. **Canna.**

"No. 1674. Santa Ana, Peru, July 6, 1915. *Achria.* Canna cultivated at Santa Ana, entirely different from that below San Miguel. Tubers are superficial and green, flowers scarlet and of different form. Midribs of leaves dissolve into fine veins some distance below the apex. Plant looks like ordinary canna, familiar in the United States. Roots white where not green. Inflorescence joints come apart. Flowers not in good condition."

41188. POLYMNIA SONCHIFOLIA Poepp. and Endl. Asteraceæ.

"No. 2022. Ollantayambo, Peru, July 24, 1915. *Llacono.* A root crop grown sparingly about Ollantaytambo at altitudes of about 10,000 feet. The tubers resemble sweet potatoes externally, but are white and watery within and taste much like Jerusalem artichokes."

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41189 to 41192. (Undetermined.)

41189. "No. 624. Ollantaytambo, Peru, June 8, 1915. From a small liliaceous plant on a reforested terrace, 1 league above Ollantaytambo. The tubers are like small yams or calathea tubers. To be raised for identification."

Tubers.

41190. "No. 1069. Colpani, Peru, June 1, 1915. *Pulla-pulla.* A liliaceous plant, to be raised for identification."

Bulbs.

41191. "No. 225. Tinta, Peru, April 16, 1915. Cactus, *Ayrampo.* Planted on walls."

Cuttings.

41192. "No. 1923. Ollantaytambo, Peru, July 20, 1915. Cactus."

Cuttings.

41193. FURCRAEA sp. Amaryllidaceæ.

"No. 1917. Ollantaytambo, Peru, July 20, 1915. *Chuchao.* A native fiber plant very abundant in the dry districts about Ollantaytambo and ascending to an altitude of over 10,000 feet. Propagates by bulblets which are produced on the inflorescence, with or without flowers. May have possibilities as a hardy type very easy to propagate."

41194. ULLUCUS TUBEROSUS Caldas. Basellaceæ. Ullucu.

"No. 2023. La Paz, Bolivia, August 4, 1915. *Papa lisa.*"

Tubers.

41195. TROPAEOLUM TUBEROSUM Ruiz and Pavon. Tropaeolaceæ. Anyu.

"No. 2029. Ushcopata, Sicuani, Peru, April 9, 1915. *Pucaañu.* From Ushcopata, a few miles above Sicuani. Marked with purplish across the eyes. See No. 2024 [S. P. I. 41185]."

Tubers.

41196. ULLUCUS TUBEROSUS Caldas. Basellaceæ. Ullucu.

"No. 2037. Santa Ana, Peru, July 6, 1915. *Papa lisa.* Raised at Vilcabamba, Peru. Round, deep-yellow variety, variable in size."

Tubers.

41197 to 41243. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

"Peru is the home of the potato, which is the principal crop throughout the region of the high table-lands and along the eastern and western slopes of the Cordilleras. On the western slopes, which are exposed to the cold, the cultivation of potatoes is carried down to the shores of the Pacific, but on the eastern slope seldom extends below 8,000 feet, corn becoming the dominant crop below 10,000 feet. The number of potato varieties is very large, and a very great diversity of forms is shown, far beyond anything with which we are familiar in the United States. Unlike the varieties of corn, most of which are named only by color, the potato varieties have special names, though strains of different colors are recognized in many of the varieties. No attempt was made to secure a complete collection of varieties, but a series of photographs was made in order to show the general range of forms. The specimens were brought back with a view to supplementing the collection of South American varieties made by Mr. W. F. Wight in 1913."

Tubers.

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41197. "No. 1974. Ollantaytambo, Peru, June 16, 1915. *Pucaqquehuillo chaucha.* Long, slender, curled like sweet potatoes, deep-red color. *Chaucha* means early. Considered earliest variety; matures in six months. Season slow because of cold. May do well in northern regions."

41198. "No. 1975. Ollantaytambo, Peru, June 16, 1915. *Alccatarma.* Pink and white, looks like *huayruru* [S. P. I. No. 41208]; in Cuzco and Sicuani. Has the same depressed form."

41199. "No. 1976. Ollantaytambo, Peru, June 16, 1915. *Pucacompis.* Pink all over; very deep eyes."

41200. "No. 1977. Ollantaytambo, Peru, June 16, 1915. *Paltasunchus.* Flat like *Alccatarma* [S. P. I. No. 41198], with shallow eyes. Color white."

41201. "No. 1978. Ollantaytambo, Peru, June 16, 1915. *Yanapuiban. Pucacompis* [S. P. I. No. 41199] form, but deep dull purple or lead color."

41202. "No. 1979. Ollantaytambo, Peru, June 16, 1915. *Alccacompis.* Small, round, rather deep eyes, color white and pink. Name *alcca* means spotted or of two colors."

41203. "No. 1980. Ollantaytambo, Peru, June 16, 1915. *Ccohuisulluchi.* Small, flat, crooked, white and purple; apparently same as variety from Cuzco called *Pucasuituche.*"

41204. "No. 1981. Ollantaytambo, Peru, June 16, 1915. *Yanaberundus.* Long, oval or tapering, deep purple color, *yana* meaning black."

41205. "No. 1982. Ollantaytambo, Peru, June 16, 1915. *Chorillo.* Long form, white, deeply notched across eyes."

41206. "No. 1983. Ollantaytambo, Peru, June 16, 1915. *Muruchunqui.* Large, flat, slightly purplish, but dull, with deep purple or blackish spots."

41207. "No. 1985. Ollantaytambo, Peru, June 16, 1915. *Yanacusi.* Flat, crooked, deep purplish with notch below the eyes."

41208. "No. 1986. Cuzco, Peru, July 23, 1915. *Huayruru.* White and red spotted. Form flattened. Grown around Cuzco."

41209. "No. 1987. Cuzco, Peru, July 23, 1915. A deep purple long variety."

41210. "No. 1988. Cuzco, Peru, April 6, 1915. *Petiquiña.* Dark purple, cylindrical with many deep eyes."

41211. "No. 1989. Cuzco, Peru, April 6, 1915. *Lluturuntu.*"

41212. "No. 1990. Cuzco, Peru, April 6, 1915. *Soccohuaccoto.* Color light bluish."

41213. "No. 1991. Cuzco, Peru, April 6, 1915. *Ellusunchu.* In form like *Pucacompis* [S. P. I. No. 41199] and with the same deep eyes except that they are smaller and their color lighter."

41214. "No. 1992. Cuzco, Peru, April 6, 1915. *Yanacusi.* Outside dull grayish or clay color. Inside deep purplish under the skin, then white with bluish lines in the flesh."

41215. "No. 1993. Cuzco, Peru, July 29, 1915. *Pichireto.* Long oval, small eyes, grows large, surface mottled purplish, pink and white. Interior white, sprout red."

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41216. "No. 1994. Cuzco, Peru, July 29, 1915. *Pucapetiquiña.* A well-known form, flesh yellow, purple-red under skin; one tuber with a purple-red core. Uniform reddish color outside."

41217. "No. 1995. Cuzco, Peru, July 29, 1915. *Pucacañari.* Extreme form of *Petiquiña* group with large prominence under each eye. Color red like *Pucapetiquiñas.*"

41218. "No. 1996. Cuzco, Peru, July 29, 1915. *Chilquehuarmi.* Similar form to *Cheqquepuru*, but eyes more shallow and short like transverse slits. Uniform."

41219. "No. 1997. Cuzco, Peru, July 29, 1915. *Cheqquepuru* or *Murupetiquiñas.* Short deep eyes, white and dark-purple in large patches, to which the name *Murupetiquiñas* has reference. Flesh yellow, with a few scattered purplish spots along the boundary lines."

41220. "No. 1998. Cuzco, Peru, April 6, 1915. *Lomo.* A rather promising form, long, like the variety from below Panticalla Pass, but tinged with pinkish red instead of with purple. Eyes shallow, outside color yellow and pink spotted. White within. Size small; form long, cylindrical, or tapering at one or both ends. Surface smooth. Considered the best variety of the lot. Raised in quantities around Cuzco."

41221. "No. 1999. Cuzco, Peru, April 6, 1915. *Pucaberundus* or *Lequechu.*"

41222. "No. 2000. Cuzco, Peru, April 6, 1915. *Sale.* Some with terminal buds, some still dormant. Small, round, reddish, with deep eyes, like small-sized *Pucacompis* [S. P. I. No. 41199].

41223. "No. 2001. Cuzco, Peru, April 6, 1915. A common variety, rounded or somewhat square, with very deep eyes."

41224. "No. 2002. Cuzco, Peru, April 6, 1915. *Aspasuncho.*"

41225. "No. 2003. Cuzco, Peru, April 4, 1915. *Suayllu.* Color reddish ('carmisa') outside and in. Shape long, size large, quality good. A few around Cuzco, but more productive and larger at higher altitudes."

41226. "No. 2004. Cuzco, Peru, April 18, 1915. *Suituche* or *Ccohuisullo* or *Pucasuituche* or *Pucaccohuisullo.* Small, long, dull purple, but yellowish around eyes, deep purple, irregular. Seems to be a rare variety, not familiar to most of those asked about it."

41227. "No. 2005. Cuzco, Peru, April 6, 1915. *Pucasuayllu.* Flesh creamy yellow, tinged with purple next the skin."

41228. "No. 2006. Cuzco, Peru, April 6, 1915. *Poccoya* or *Phoccoya.* Red, with deep eyes."

41229. "No. 2007. Cuzco, Peru, April 4, 1915. *Caylluhuacoto*, previously called *Caillulhuacot.* Yellow outside, white within; large, round; planted about Cuzco, Chincheros, etc."

41230. "No. 2008. Arraranca, Peru, April 12, 1915. *Ccanchalli.* White, strongly mottled with purple. Grown at the highest altitude, 14,000 feet. Curious in having most of the eyes on one side, the other side flat."

41231. "No. 2009. Tinta, Peru, April 16, 1915. *Leqquerunto.* Very smooth skin."

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41232. "No. 2010. Tinta, Peru, April 16, 1915. *Yuracjpetiquiña.*"

41233. "No. 2011. Arraranca, Peru, April 13, 1915. *Tutu.* Grown at the highest altitude of potato culture, about 14,000 feet. Plant No. 179. Has very strong purple rootstocks, the tubers also purple, eyes very large and prominent, subtended by a broad scale with a spine in the middle, like the *oca* and *anyu.* Foliage coarse. Said to be used only for making chuños."

41234. "No. 2012. Pinasniocj, Peru, July 16, 1915. *Cusi* or *Pucacusi.* Dark russet brown outside, purplish flesh, eyes deep. Considered a very fine variety. Altitude, 12,000 feet."

41235. "No. 2013. Pinasniocj, Peru, July 16, 1915. *Qquellopuiban.* Appearance like *Chilquehuarmi* [S. P. I. 41218]. Buds somewhat longer and with smaller eyes. Yellowish inside, whence the name. Altitude, 12,000 feet."

41236. "No. 2014. Pinasniocj, Peru, July 16, 1915. *Pucatarma.* Flat, oval, pink, shallow eyes; popular in market of Cuzco, on account of small eyes and smooth surface. Altitude, 12,000 feet."

41237. "No. 2015. Pinasniocj, Peru, July 16, 1915. *Muruchocjllus* or *Chocjllus.* Like *Petiquiña,* deep broad eyes, deep dull purple, spotted with white. Another smaller variety is called *Muruchancha.* Larger specimen than found later at Cuzco. Altitude, 12,000 feet."

41238. "No. 2016. Pinasniocj, Peru, July 16, 1915. *Yanamalan.* Flat, oval, silvery gray, eyes broad with long excurrent ridges. Altitude, 12,000 feet."

41239. "No. 2017. Pinasniocj, Peru, July 16, 1915. *Charcahuaylla.* Large, long pointed, mottled with light grayish and dull bluish purple. Quality not considered especially fine. Form convenient for handling. Altitude, 12,000 feet."

41240. "No. 2018. Machu Picchu, Peru, May 28, 1915. Cultivated to a slight extent above Machu Picchu and on the slopes above San Miguel at an altitude of 6,500 feet. Tubers very small, rounded. Of interest as representing the lowest altitude of potato cultivation."

41241. "No. 2019. La Paz, Bolivia, August 5, 1915. Long, slender, flattened, and curled, like *Pucaqquehuillo chaucha* [S. P. I. 41197] from Ollantaytambo. Skin light pinkish. Eyes few and shallow. Terminal eye sprouted only."

41242. "No. 2020. Lima, Peru, August 16, 1915. Size variable, light grayish. Skin smooth. Eyes very deep, almost invisible. Space between eyes greatly swollen or puffed out. Terminal eyes shallow, sprouted. Flesh firm; considered a superior variety."

41243. "No. 2042. Machu Picchu, Peru, May 28, 1915. Cultivated to a slight extent above Machu Picchu and on the slopes above San Miguel at an altitude of 6,500 feet. Tubers long slender form, purple. Of interest as representing the lowest altitude of potato cultivation."

41244 and 41245. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Pungo Andongo, Angola. Presented by Rev. John C. Wengatz, Rome, N. Y. Received September 25, 1915.

Two varieties of native sorghums.

41244. "White *Masambala* or Kafir corn."

41245. "White *Masambala* or Kafir corn."

41246 to 41251. HORDEUM spp. Poaceæ. **Barley.**

From Petrograd, Russia. Presented by Mr. Robert Regel, chief, Bureau of Applied Botany. Received June 21, 1915.

41246. HORDEUM DISTICHON NUTANS Schubl.

41247. HORDEUM VULGARE PALLIDUM Seringe.

41248 to 41251. HORDEUM DISTICHON NUTANS Schubl.

41252 and 41253. AMYGDALUS spp. Amygdalaceæ. **Peach.**

From Catania, Italy. Presented by Mr. Joseph Emerson Haven, American consul. Received September 22, 1915. Quoted notes by Mr. Haven.

"Seeds are planted in the month of January and the fruits may be expected in three years in the months of July and August. The production in the Messina section of this district is fairly large, as also in the Palermo consular district, but very few peaches are grown in the immediate neighborhood of Catania."

41252. AMYGDALUS PERSICA L.
(*Prunus persica* Stokes.)

"The rough skinned is the ordinary peach of commerce, a clingstone and never very sweet. It is generally disappointing."

41253. AMYGDALUS PERSICA NECTARINA Ait. **Nectarine.**

"The smooth-skinned peach is found in considerable quantities. It is termed *Sbergia* in the Sicilian language, has an appearance of a golden plum shot with crimson lines, and bears a close relation to the nectarine. In size it is about the same as the crab apple and is a delicious fruit when properly ripe."

41254 and 41255.

From Para, Brazil. Presented by Mr. George H. Pickerell, American consul. Received September 9, 1915.

41254. ORBIGNYA SPECIOSA (Mart.) Barb. Rodr. Phœnicaceæ.
(*Attalea speciosa* Mart.) **Uauassu.**

"*Babassu* or *Uauassu.*"

41255. VIROLA SURINAMENSIS (Rol.) Warb. Myristicaceæ.

"*Ucuúba,* gathered at Tuyue on the Purus River."

"In spite of being represented by a much smaller number of species, the Myristicaceæ are more important as timbers than the Annonaceæ, especially the two commonest species of the Amazon, *ucuúba branca* (*Virola surinamensis* Warb.) and *ucuúba vermelha* (*Virola sebifera* Aubl.). The first, especially, is one of the most useful trees of the Amazon region, not only for its easily worked wood, moderately hard, but also for its seeds, which furnish a kind of vegetable wax rich in stearin. While the *ucuúba*

41254 and 41255—Continued.

branca is found principally in the varzeas [probably meaning low, swampy valleys] it is not excluded from the terra firma [meaning dry ground]; the *ucuúba vermelha*, which is distinguished by its larger leaves and smaller fruits, is a tree of the dry land and is found principally in the forests. Both these species have, especially when young, a characteristic manner of growth, with slender whorled branches furnished with regularly distichous leaves. The regularity of its branching reminds one of the European conifers. Without doubt other Amazonian species of Virola and probably also some species of Iryanthera furnish wood which could be utilized, but I have no positive knowledge in regard to this." (*J. Huber, Mattas e Madeiras Amazonicas, Boletim de Museu Goeldi, vol. 6, p. 173, 1910.*)

41256 to 41269.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received September 27, 1915. Quoted notes by Mr. Meyer, except as otherwise indicated.

41256. Myrica rubra Sieb. and Zucc. Myricaceæ.
(*Myrica nagi* Thunb.)

"(No. 2306a. Hangchow, Chekiang, China, June 29, 1915.) A large-fruited variety of the so-called strawberry tree, or *nagi*. The fruits are the size of crab apples, of dark purple color, and of very attractive looks. They can be used in a multitude of ways, like out of hand, boiled in compotes, in pies, for sirup, and for wine. In general there exists a great variation among the trees as regards general habits, productivity, etc.; the fruits themselves vary also greatly in color, size, and taste. The best varieties are propagated by inarching; the trees are evergreen; they thrive best on well-drained, rocky terraces. The localities that will best suit them in the United States will probably be the southern sections of the Gulf Coast States and the milder parts of California. Chinese name *Yang mei*."

41257. Prunus salicina Lindley. Amygdalaceæ. **Plum.**

"(No. 2307a. Hangchow, Chekiang, China, June 29, 1915.) A medium-sized plum, clingstone, of reddish color, meat juicy and sweet in the center, but somewhat astringent near the skin and decidedly sour near the stone. The trees grow dense and low and are able to grow on water-logged land; that is, they thrive with the surface water only a few inches away at times. Of value for breeding purposes, especially in the Gulf Coast States."

41258. Amygdalus persica L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"(No. 2308a. Chekiang Province, China, July, 1915.) Stones of various types of peaches, collected in Chekiang. To be sown in the South for experimental purposes."

41259. Chionanthus retusa Lindley. Oleaceæ.

"(No. 2309a. Panshan, near Hangchow, Chekiang, China, June 29, 1915.) The Chinese fringe tree, generally seen as a shrub, but occasionally found as a tree, a most beautiful and striking object when covered with its multitude of small, finely dissected white flowers, which are delightfully fragrant. Bears in early fall masses of blue-black berries. This plant naturally loves rocky mountain slopes and contrasts well with

41256 to 41269—Continued. (Quoted notes by Mr. F. N. Meyer.)

bowlders and stones. It is used by Chinese gardeners in Shantung as a grafting stock for the tea olive, *Olea fragrans*, no doubt to keep the latter dwarf, and it withstands drought much better than when on its own roots. Much recommended as an ornamental garden and park shrub, especially for those sections of the United States where the winters are not too severe. Local Chinese name *Swe tsin tiao*."

41260. Premna microphylla Turcz. Verbenaceæ.

"(No. 2310a. Mokanshan, Chekiang, China, August 6, 1915.) A deciduous shrub, from 3 to 10 feet in height, having glossy green leaves, resembling those of the lilac; flowers in panicles apparently white; berries black. Thrives in semishady places. Of value, possibly, as a hedge shrub for mild-wintered climates."

41261. Agyneja impubes L. Euphorbiaceæ.
(*Glochidion sinicum* Hook. and Arn.)

"(No. 2311a. Mokanshan, Chekiang, China, August 6, 1915.) A shrub or small tree, growing from 2 to 20 feet in height, found on stony places mostly. Produces annual branches which resemble pinnated leaves on which flowers and fruits are being borne. Of value as a garden and park shrub in mild-wintered places."

41262. Symplocos stellaris Brand. Symplocaceæ.

"(No. 2312a. Mokanshan, Chekiang, China, August 3, 1915.) An evergreen shrub, with dense leathery foliage, like a rhododendron. Bears elongated, fleshy berries of blue color all along its wood, making a curious impression. Found in shaded spots on mountain slopes. Of value as a cover shrub in parks and gardens for the southern United States."

41263. Euscaphis japonica (Thunb.) Dippel. Staphyleaceæ.
(*Euscaphis staphyleoides* S. and Z.)

"(No. 2313a. Near Hangchow, Chekiang, China, June 26, 1915.) A shrub with deciduous pinnate leaves, bearing apparently white flowers, followed by capsules which turn from green to a brilliant red when ripening. Found on stony and waste places. Of use as a park shrub for mild-wintered regions."

"A deciduous bush up to 12 feet high, with stout, pithy branchlets and prominent buds; twigs smooth. Leaves 6 to 10 inches long, opposite, consisting usually of seven to nine leaflets. Leaflets opposite, ovate, 2½ to 4 inches long, long pointed, shallowly toothed, smooth except for a little down near the base of the midrib. Panicle terminal, branching, 4 to 9 inches long, carrying numerous yellowish white flowers, each about one-fourth inch across. Fruit consisting of three somewhat boat-shaped, spreading, rosy pink pods, one-half inch long, seeds black. Native of China, Korea, and Japan. As the specific name implies, this shrub is not only closely related to the bladder nuts (Staphylea), it also bears much resemblance to them. It differs in the larger number of leaflets, in the smaller individual flowers, and in the smaller, differently shaped fruit. Unfortunately, it is not very hardy and can only be grown outside permanently in the mildest localities." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 546.*)

41264. (Undetermined.)

"(No. 2314a. Purple Mountain, near Nanking, China, June 3, 1915.) A blueberry, of small growth, found on dry, rocky places at altitudes of about 1,000 feet above the sea. Bears edible berries."

41256 to 41269—Continued. (Quoted notes by Mr. F. N. Meyer.)

41265. RUBUS sp. Rosaceæ. **Raspberry.**

"(No. 2315a. Near Lungtun, Kiangsu Province, China, June 6, 1915.) A low-growing species of raspberry bramble, bearing large, beautiful-looking fruits, which are quite juicy, though lacking in any pronounced flavor. Occurs on grassy embankments and on mountain slopes. Of use probably in hybridization experiments."

41266. MEDICAGO HISPIDA DENTICULATA (Willd.) Urban. Fabaceæ. **Bur clover.**

"(No. 2316a. Nanking, Kiangsu Province, China, June 2, 1915.) A low-growing somewhat hirsute form of a common bur clover, found among grasses on waste lands and along roadsides. Of value possibly as a winter-forage plant in Pacific coast localities."

41267 and 41268. VICIA spp. Fabaceæ. **Vetch.**

41267. "(No. 2317a. Nanking, Kiangsu, China, June 2, 1915.) Low-growing vetch, found among short grasses on gravel lands. Of value possibly as a winter-forage plant in Pacific coast localities."

41268. (Nanking, Kiangsu, China, June 2, 1915.) Seed selected from Meyer's No. 2317a [S. P. I. 41267], because of evident specific differences.

41269. (Undetermined.)

"(No. 2318a. Mokanshan, Chekiang, China, July 23, 1915.) A climbing cucurbitaceous plant, having small, dissected leaves; bears small, soft, warty fruits. Of use as an ornamental porch and cover vine for semishady situations."

41270 and 41271.

From Suva, Fiji Islands. Presented by the superintendent, Department of Agriculture. Received September 30, 1915.

41270. CITRUS NOBILIS DELICIOSA (Tenore) Swingle. Rutaceæ. **Mandarin.**

"The local mandarins are most excellent in quality, of large size, good flavor, and juicy, but with skin rather coarse." (*C. H. Knowles.*)

Bud sticks.

41271. CYMBOPOGON COLORATUS (Hook.) Stapf. Poaceæ. **Lemon grass.**

See S. P. I. No. 40896 for previous introduction and description.

41272 and 41273. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.

(*Prunus persica* Stokes.)

From Teheran, Persia. Presented by Mr. Ralph H. Bader, American vice consul. Received September 25, 1915.

41272. "Yellow pit. Seeds of clingstone peach commonly cultivated in this district; the flavor compares favorably with the flavor of those grown in the United States. The peach is indigenous in Persia, but so far as is known the Persians have never made a systematic effort to improve the quality of this fruit." (*Bader.*)

41273. "Red stone Seeds of clingstone peach commonly cultivated in this district." (*Bader.*)

41274. Amygdalus persica L. Amygdalaceæ. **Peach.**

(*Prunus persica* Stokes.)

From Amoy, China. Presented by Mr. Lester Maynard, American consul. Received September 30, 1915.

"Seeds of late-season peaches, such as are grown in this district. They blossom and form their fruit in the latter part of March and ripen at the end of June. The fruit is about the size of a duck's egg, and they are sweet, but tart. The skin is rose color, as is the fruit, and they are of the clingstone variety. They are known locally as *pear* peach." (*Maynard.*)

41275 to 41281.

From Bhutan, India. Collected by Mr. R. E. Cooper and presented by Bees, Ltd., Liverpool, England, at the request of Mr. A. K. Bulley. Received September 28, 1915. Quoted notes by Mr. Cooper.

41275. (Undetermined.)

"No. 3829. Shrubby bush (Rosaceæ) 5 feet through, little tufts of pink and white fibers hanging from spiny branchlets. Growing among sand and gravel in Paro district; altitude, 8,000 feet. Flowers in cold weather, November to February."

41276. (Undetermined.)

"No. 3961. A bush up to 5 feet, usually under light forest in sandy peaty soil, from the bark of which paper is made locally. Altitude 9,000 to 10,000 feet. Flowering in autumn, November."

Received as a species of Daphne, but the seeds do not appear to belong to that genus.

41277 to 41281. Primula spp. Primulaceæ. **Primrose.**

41277 and 41278. Primula spp.

41277. "No. 4008. *P. capitata* type in fruit at 12,000 feet. Smaller plants at 14,000 feet show hanging wide-mouthed blue flowers. In peaty meadow at fringe of Abies forest. Flowering in May and June."

41278. "No. 4082. Allied to *P. petiolaris*, but leaves and flower stems long to 18 inches, head often of 12 to 20 flowers. Growing in sodden leaf soil and gravel on a forest hillside under Acer and Abies. Flowering in May; only seen in fruit at an altitude of 11,000 feet."

41279. Primula petiolaris Wallich.

"No. 4129. With sessile inflorescence (à la *Wintsii*) in moist gravel and sandy leaf mold in shade of Abies forest at 11,000 feet. Flowering in May."

41280. Primula obtusifolia Royle.

"No. 4133. Flowers purple; in alpine peat meadows at 13,000 feet."

41281. Primula sp.

"No. 4132. Same as 4008 [S. P. I. No. 41277] but at an altitude of 13,000 feet. In peat meadows with a 'meal' on leaves. No. 4008 had 'meal' (white) on under surface of leaves."

41282. Cassia angustifolia Vahl. Cæsalpiniaceæ.

From Poona, India. Presented by Mr. W. Burns, economic botanist, Agricultural College. Received July 29, 1915.

"Obtained from Mr. H. G. Sampson, deputy director of agriculture, southern division, Madras Presidency." (*Burns.*)

41283 and 41284. OPUNTIA spp. Cactaceæ. **Prickly-pear.**

From Ollantaytambo, Peru. Presented by Mr. Ellwood C. Erdis, New Haven, Conn. Cuttings received September 21, 1915.

41283. "Spineless tuna; from 9,000 feet altitude at this place." (*Erdis.*)

41284. "A spiny tuna with yellow flowers; from 9,000 feet altitude at this place." (*Erdis.*)

41285 to 41288.

From Waverly, New Zealand. Presented by Mr. T. W. Lonsdale, manager, Moumahaki Experiment Farm, Department of Agriculture, Industries, and Commerce. Received September 30, 1915. Quoted notes by Mr. Lonsdale.

41285. BROMUS UNIOLOIDES (Willd.) H. B. K. Poaceæ. **Prairie grass.**

"Moumahaki prairie grass. The strongest and best known for providing winter feed here."

41286. DAUCUS CAROTA L. Apiaceæ. **Carrot.**

"Moumahaki matchless white carrot. Gave the best results here in 1915."

41287. TRIFOLIUM REPENS L. Fabaceæ. **White clover.**

"Moumahaki evergreen white clover. Selected for its winter growing habits."

41288. VICIA FABA L. Fabaceæ. **Broad bean.**

"Moumahaki selected horse bean. Seed produced near to the ground and plants of vigorous habit."

41289. ANNONA sp. Annonaceæ. **Anona.**

Plants grown from seed received from Mr. William J. Tutcher, superintendent, Botanical and Forestry Department, Hongkong, China, December, 1913.

41290. PITTOSPORUM CRASSIFOLIUM Solander. Pittosporaceæ.

From Auckland, New Zealand. Presented by Mr. H. H. Wright, Avondale Nurseries. Received September 30, 1915.

Evergreen shrub, 20 feet, good hedge plant. Leaves coriaceous, the under surface, as well as shoots and sepals, covered with close white hairs. Flowers in terminal umbels, often solitary, deep purple, nearly half an inch long. From the North Island of New Zealand, chiefly on the east coast. (Adapted from *Laing and Blackwell, Plants of New Zealand.*)

41291 to 41294. GOSSYPIUM spp. Malvaceæ. **Tree cotton.**

From Darwin, Northern Territory of Australia. Presented by Mr. S. A. Bailey, Agricultural Branch. Received September 30, 1915.

"From the plantation of Mr. W. B. Pruen, near Darwin. Plant 9 or 12 feet apart each way, according to climate. At the end of the second season remove the old wood annually from the Caravonica tree and ratoon the native sorts. Matures in two years." (*Bailey.*)

41291. Rough, *Caravonica.*

41292. Smooth, *Caravonica.*

41293. Native, interior.

41294. Native, coast.

41295 to 41314.

From Buenos Aires, Argentina. Presented by Mr. Benito J. Carrasco, director general, Botanic Garden. Received September 7, 1915.

41295. AESCHYNOMENE HYSTRIX Poir. Fabaceæ.

A leguminous (fabaceous) plant with odd-pinnate leaves; small linear or slightly oval leaflets, obtuse at apex and base; half arrow-shaped stipules; and short axillary racemes of bright yellow flowers.

41296. ASTRONIUM BALANSAE Engl. Anacardiaceæ.

Glabrous anacardiaceous tree with very hard wood; subcoriaceous leaves composed of four to five pairs of long petiolulate, oblique, lanceolate leaflets with sharply serrate margins; dense terminal panicles of very small flowers; and globose drupes. (Adapted from the original description, *Engler, Botanische Jahrbücher, vol. 1, p. 45, 1881.*)

"This is one of the most extensively utilized species of hardwood in the country. It is abundant, and is exported from the mountain regions as planks, sleepers, posts, etc." (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)

41297. BELOPERONE PLUMBAGINIFOLIA (Jacq.) Nees. Acanthaceæ.

"Small, shrubby acanthaceous plant, 1 to 2 feet high, with long petiolate soft leaves and short spikes of rich purple flowers, one-half inch long. Found in South America from Brazil to Argentina." (*Wallich, Plantae Asiaticae Rariores, vol. 3, p. 102, 1832.*)

41298. CARICA QUERCIFOLIA (St. Hil.) Benth. and Hook. Papayaceæ.

A small, rapid-growing tree, native of Paraguay, with large palmately 3-lobed leaves and small fruits, which are said to contain a larger percentage of papain than those of *Carica papaya.*

41299. COLLIGUAJA INTEGERRIMA Gill. and Hook. Euphorbiaceæ.

Coliguay.

Small euphorbiaceous shrub with opposite or alternate, narrowly lanceolate, entire, somewhat rigid leaves borne only on the upper part of the branches; monœcious spikes of flowers borne on the ends of the branches, the lower flowers being pistillate, the upper staminate. The habit resembles that of a Stillingia. (Adapted from *Hooker, Botanical Miscellany, vol. 1, p. 140, 1830.*)

41300. SEBASTIANIA KLOTZSCHIANA BRACHYCLADA (Muell. Arg.) Pax and K. Hoffm. Euphorbiaceæ.

Euphorbiaceous shrub with slightly spiny, alternate branches and inconspicuous monœcious flowers. It is called *Blanquillo* by the people of Argentina where it is a native, and is regarded by them as being poisonous.

41301. FLOURENSIA CAMPESTRIS Griseb. Asteraceæ.

A glabrous, yellow-flowered shrub from Argentina, up to 6 feet in height, with oblong-lanceolate leaves. A composite (Asteraceæ) closely allied to the *tar-bush* (*F. cernua*) of the southwestern United States and somewhat resembling the sunflowers (*Helianthus* spp.) in the structure of the flowers.

41302. GUETTARDA URUGUENSIS Cham. and Schlecht. Rubiaceæ.

A small rubiaceous tree 15 to 20 feet high, with twisted branches; opposite membranaceous, lanate leaves of varied forms ranging from ovate or elliptic to cuneate-elliptic and lanceolate, always acute, often

41295 to 41314—Continued.

mucronate, about 3 inches long and 1 inch across; caducous petiolar stipules lanceolate triangular, acute; axillary, long pedunculate cymes of white flowers with salver-shaped 5-lobed corollas, smooth within, sericeous without, less than half an inch long, and three to four bony-seeded cylindrical ovoid drupes one-third of an inch in diameter. (Adapted from *Chamisso and Schlechtendal, Linnaea, vol. 4, p. 183, 1829.*)

41303. ALEGRIA DIVARICATA (Martius) Stuntz. Tiliaceæ. **Soto caballo.**
(*Luehea divaricata* Mart.)

Handsome tree 20 to 50 feet high with graceful ashy-tomentose branches, oblong, rarely elliptic or oblong-lanceolate leaves, 4 inches long and 2 inches broad; terminal paniculate inflorescences of rather large white to rose-colored flowers. Found along river banks in the forests of Brazil. (Adapted from *Martius, Flora Brasiliensis, vol. 12, part 3, p. 159, 1886.*)

41304. MABA sp. Diospyraceæ.

An ebenaceous tree with alternate, entire leaves, and small flowers almost sessile in their axils. Known as *Maba* in Argentina, where it is used for its timber.

Received as *Maba argentinensis* Speg., for which a place of publication has not yet been found.

41305. MYROXYLON SALZMANNI (Clos) Kuntze. Flacourtiaceæ.
(*Xylosma salzmanni* Eichl.) **Ira-poitá.**

A small spiny tree 10 to 15 feet in height, with somewhat variable leaves, usually ovate-oblong to ovate, more or less crenate-dentate, 2 to 4 inches long and 1 to 2 inches broad; and diœcious inconspicuous greenish yellow flowers borne in umbellate fascicles. Native of Brazil. (Adapted from *Martius, Flora Brasiliensis, vol. 13, part 1, p. 448, 1871.*)

41306. PIPTADENIA RIGIDA Bentham. Mimosaceæ.

"Unarmed mimosaceous shrub or small tree, entirely glabrous or with the younger parts slightly pubescent; leaves composed of four to six pairs of many-paired linear falcate leaflets and axillary short spikes of small white flowers." (*Bentham,* in *Hooker's Journal of Botany, vol. 4, p. 338, 1842.*)

41307. PLAZIA ARGENTEA (Don) Kuntze. Asteraceæ.
(*Hyalis argentea* Don.)

A composite shrub from Argentina called *olivillo.* Reported by Tweedie to grow to the exclusion of almost everything else on the salt plains of northern Argentina.

41308. PTEROGYNE NITENS Tul. Cæsalpiniaceæ. **Viraro.**

A tall, stout, unarmed tree abundant in parts of Argentina and Brazil. It has pari-pinnate leaves, with usually alternate, lanceolate leaflets; and small flowers in short, loosely flowered, axillary clusters. (Adapted from *Engler and Prantl, Die Natürlichen Pflanzenfamilien, vol. 3, part 3, p. 130.*)

"The wood is very strong and resistant. It is used for the construction of carts, except for the spokes. It is considered an excellent wood in Misiones and is exported. In Salta it is also highly valued and is used in coach making." (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)

41295 to 41314—Continued.

41309. Ruprechtia fagifolia Meissn. Polygonaceæ. **Duraznillo blanco.**

"An abundant tree with smooth bark which renews itself annually, and which after becoming dry, but before falling, becomes wrinkled and gives the tree a peculiar and very characteristic appearance. Wood rosy, hard; trunk coarse, not utilized. A very handsome ornamental tree; in spring it is covered with yellow flowers which later become rosy. Their color resembles that of the peach flower; hence the name *Duraznillo.*" (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)

41310. Schinopsis lorentzii (Griseb.) Engler. Anacardiaceæ. (*Quebrachia lorentzii* Griseb.) **Quebracho colorado.**

A tree with compound leaves composed of 10 to 15 pairs of persistent, leathery leaflets, glabrous above. Highly prized for its hard and durable reddish colored timber. One of the most valuable trees in Argentina.

41311. Sida bonariensis Willd. Malvaceæ.

Shrubby plant with cordate, oblong leaves, deeply crenate, stellate-pubescent above, tomentose beneath; the capsule villous. Native of Argentina; called *Malvisco.*

41312. Solanum bonariense L. Solanaceæ.

Tender evergreen shrub up to 10 feet high, with ovate-oblong, sinuate-repand leaves, long lateral racemes of large white flowers, and globose yellow berries. Native of Argentina, where it is called *Granadillo.* Said to have medicinal properties.

41313. Vallesia glabra (Cav.) Link. Apocynaceæ. **Ancochi.**

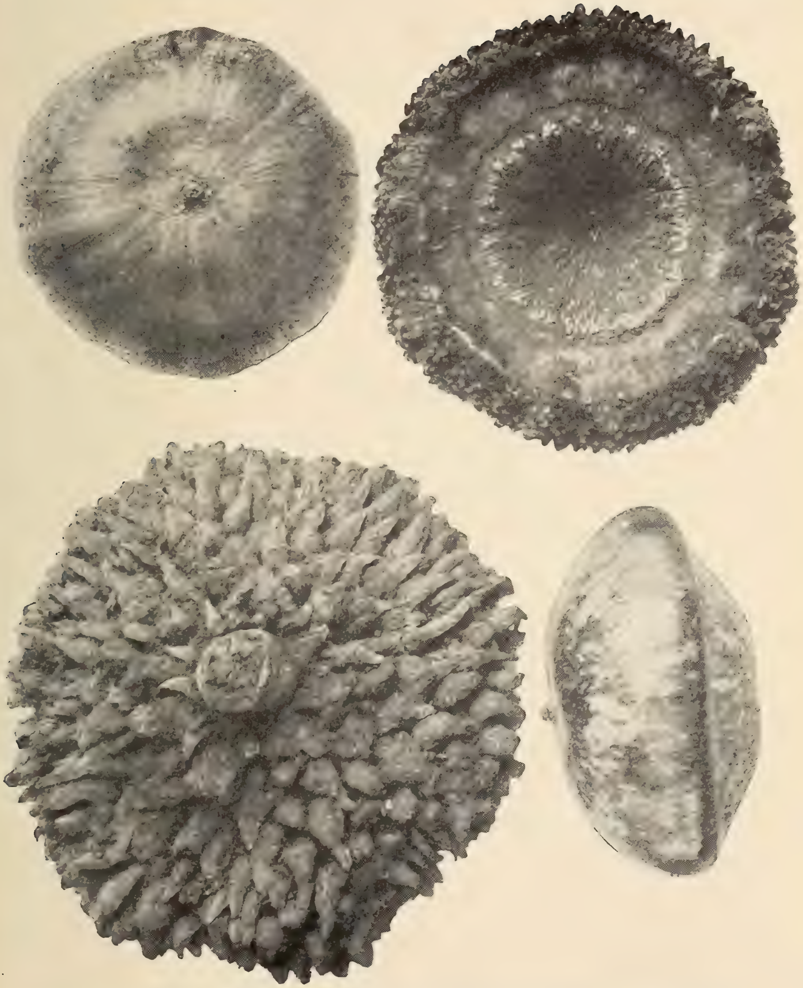
"A small, spineless tree with somewhat twisted branches; soft, yellow wood which is not utilized. It is abundant near rivers. Its fruit is white, resembling a pearl. The bark is rugose and soft like that of the *Cedrillo;* it is a poisonous plant, but in 1896 and in 1909 I ate the fruits without suffering any ill effects." (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)

Found from Florida through tropical America to Chile and Argentina.

41314. Vitex montevidensis Cham. Verbenaceæ.

A small tree from Uruguay and Brazil 15 to 20 feet high with branches usually compressed and dilated at the nodes; ashy-gray, glabrous bark; seemingly opposite palmate leaves composed of five, rarely three, lanceolate to elliptic leaflets 4 to 6 inches long; and axillary cymes of slightly irregular flowers with nearly rotate 5-lobed corollas. (Adapted from the original description, *Linnaea, vol. 7, p. 373, 1832.*)

"The wood, of reddish color, somewhat striped, hard, is strong and much esteemed. As it resists moisture well it is much used for posts, etc.; and being easily split, it is used for shingles. The fruits yield a kind of oil; and the wood itself, even after it has become dry, exudes oil when placed on the ground, and seems to become green again." (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)



Giant Acorns of a Mexican Oak (Quercus insignis, S. P. I. No. 39723).

A white oak which occurs in the vicinity of Huatusco, about midway down the flanks of Mount Orizaba in the State of Vera Cruz, Mexico, forming there trees 60 to 80 feet high, branching 30 or 40 feet from the ground; believed by Dr. Purpus to be capable of acclimatization in Florida, Porto Rico, and Hawaii. The acorns are edible. (Photographed by Mr. E. L. Crandall, Washington, D. C., May 21, 1918; natural size; P23880FS.)

NOTE OF CORRECTION.

In Inventory 42, Plate I, opposite p. 16, was printed a photograph supposed to represent acorns of S. P. I. No. 39723, *Quercus insignis* Martens and Galleotti. Dr. William Trelease has called our attention to the fact that these acorns are *Q. cyclobalanoides* Trelease. We here publish Plate XI, from a photograph of the true *Q. insignis*, with a corrected legend. The legend under Plate I in Inventory 42 should read:

"Acorns of *Quercus cyclobalanoides* Trelease, the Mexican ring-scaled white oak, closely related to *Q. insignis;* collected in the State of Chiapas, by Dr. C. A. Purpus. Photographed, natural size, by Mr. E. L. Crandall, Washington, D. C., March 14, 1914 (P13834FS). No S. P. I. number was assigned to these acorns."

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Issued December 24, 1918.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED
BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1915.

(No. 45; Nos. 41315 to 41684.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1915 (NO. 45; NOS. 41315 TO 41684).

INTRODUCTORY STATEMENT.

Although this inventory chronicles the arrival of only 370 new plant immigrants, it describes some that are of unusual interest and deserving of special mention. It covers certain plants of the high Peruvian Andes collected by Mr. O. F. Cook while attached to the Yale University–National Geographic Society Expedition. These include a remarkable wild relative of the tomato (No. 41318), which has a pleasant, slightly acid flavor, resembling that of an apple, and remarkable keeping qualities which may make it of particular interest to tomato breeders; one of the Mutisias (No. 41317), a large trailing composite vine worthy of trial in our greenhouses for its beautiful orange to scarlet pendent flowers, which suggest thistles; a passion fruit (No. 41316), the pulp of which separates from the hard shell, making it possible to peel the shell away; the tara (*Caesalpina pectinata*, No. 41323), a spiny leguminous tree or shrub which may make a striking hedge plant in our Southwestern States, its bright scarlet pods contrasting with its deep polished-green leaves as holly berries do; the tasta (No. 41324), a fine-leaved shrubby Escallonia, which may make a desirable hedge plant as far north as San Francisco; the lengli (*Hesperomeles oblonga*, No. 41325), an attractive tree with evergreen leaves and brilliant red fruits, hanging on all winter like holly berries; the capuli cherry of Peru (*Prunus salicifolia*, No. 41328), from an altitude of 12,000 feet, which resembles a chokeberry but has a firm flesh of good texture and agreeable taste; a variety of the sweet cassava (*Manihot dulcis*, No. 41320), which species, according to Cook, is represented by varieties maturing at 6,000 feet on the eastern slopes of the Andes and in the cold cloudy coastal climate of the Pacific coast; a species of tree (*Datura sanguinea*, No. 41329), with green, orange, and scarlet flowers, which occurs where heavy frosts are encountered every night; the lucuma of Peru (No. 41332), a popular fruit with rich mealy flesh, resembling a cooked sweet potato, and with a hardiness which presumably will enable it to be grown in California and Florida; a South American walnut (*Juglans* sp., No. 41334), of distinct value to plant breeders, the bark of which is used for dyeing wool the color of the famous vicuña ponchos; and a remarkable species of the papaya (No. 41339), which produces fruits that will keep for two weeks or more after they are ripe and which are as deliciously fragrant as a well-ripened muskmelon and of excellent flavor but tough texture. Although the quinoa (*Chenopodium quinoa*, No. 41340) has often been introduced into America and has nowhere yet found a home, it is important to get an opinion regarding this plant from a keen observer and thoroughly trained agricultural explorer. Mr. Cook reports that previous to the introduction of wheat and barley this cultivated pigweed was one of the two most widely grown crops of the remarkable Inca civilization, that it is pronounced by a Scotchman resident there to-day as being better than oatmeal for a breakfast food, and that it appears very vigorous and productive and may possibly be gathered and thrashed by machinery.

Among the introductions sent in by correspondents or collected by travelers, there are several unusual things covered by this inventory. To Rev. George Campbell, the American missionary who has sent in so many interesting plants from South China, we are indebted for a most remarkable dwarf peach (No. 41395), which is handled as a pot-grown tree in China and which he says comes true to seed. He reports that one small tree 15 inches high with a stem no larger than a lead pencil ripened five good-sized edible clingstone peaches. The behavior out of doors at Chico of a number of seedlings of this peach suggests the possibility of a dwarf race of peach trees of value as fruit producers and for plant breeding. Mr. Carlos Wercklé, of Costa Rica, sends seeds of the sansapote (*Licania platypus*, No. 41393), the most beautiful forest tree in Costa Rica, which grows to gigantic size, bears an edible fruit, and produces timber nearly as good as the Cedrela timber of Cuba. Mr. A. Rolloff, director of the Tiflis Botanic Garden, who has sent so many new hardy plants from the Caucasus, presents us with seeds of the beautiful sulphur-yellow peony (No. 41476), recently discovered near Lagodekhi in eastern central Caucasus by Mlokosewitsch, for whom it was named. *Caragana arborescens* has become almost a necessary hedge and shelter-belt plant on the Canadian Great Plains, and it is coming to be better appreciated in our own Northwest. A beautiful, striking, prostrate form (No. 41480) to which Mr. Norman M. Ross, of Indian Head, directed attention last year, and which he has since sent us, can scarcely fail to be of value for dooryard planting in the coldest portions of our country.

It always gives a feeling of satisfaction to realize that a tree introduction has reached a stage where it is producing a supply of seed in this country. The Queensland nuts (No. 41472) sent in from Homestead, Fla., by Mrs. L. L. Bow were produced by a tree sent to her by this office in 1911. Its productiveness and the quality of the nuts indicate that this new nut tree, which furnishes a basis for a small industry in Australia, is a promising one for both Florida and California.

Collections of seven winter-wheat varieties (Nos. 41510 to 41516) from Baluchistan, presented by Mr. A. Howard, of the Indian Service, and of 18 varieties (Nos. 41342 to 41356 and 41682 to 41684) from Pusa, India, should yield something valuable for the wheat breeders.

The hybrids between the American chinkapin and the Japanese chestnut (Nos. 41357 to 41360), made by Dr. Walter Van Fleet, bear nuts which in size and sweetness should recommend them to the serious attention of nut growers.

The Mascarene grass (*Osterdamia tenuifolia*, No. 41509), which has been used so extensively by the Japanese for lawns, but which comes to us from the island of Guam, has already shown its remarkable lawn-making character in southern Florida, where lawns are most difficult to maintain.

A species of Rubus (No. 41676) from India, making a growth of 20 feet and said to be the most robust of the genus, together with five other species from the same section of the Himalayas, may have special interest for breeders, even though they may not do well generally.

Those Americans who have tried in vain to grow as a border plant the brilliant Calceolaria, so common in Great Britain, may be glad to test as a substitute the Australian Crotalaria (No. 41571), which Mr. James Pink, who sends it in, predicts will be highly successful in borders in dry situations.

The Pondoland cocos (*Jubaeopsis caffra*, No. 41484) will have a botanical interest to all palm lovers as the only members of the tribe to which the coconut belongs which occurs in Africa, all the others being inhabitants of the Western Hemisphere.

Chinese place and plant names in this inventory have been brought, so far as possible, into accord with the best authorities, the geographic names (except when fixed by decisions of the United States Geographic Board) being given in the form accepted by the Chinese Ministry of Communications Postal Guide. Many of the smaller village names, however, are not listed therein, and in all such cases the location of the village is given with reference to the nearest town mentioned in that work.

The manuscript of this inventory was prepared by Miss May Riley, the botanical determinations of seeds introduced were made and the notes on geographic distribution compiled by Mr. H. C. Skeels, while the descriptive and botanical notes were arranged by the late Mr. S. C. Stuntz.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., May 31, 1918.

INVENTORY.

41315. Lilium philippinense Baker. Liliaceæ. **Benguet lily.**

From Manila, Philippine Islands. Bulbs presented by Mr. A. Hernandez, acting Director of Agriculture. Received October 4, 1915.

"Grown at La Trinidad Experiment Station, Trinidad, Benguet, P. I." (*Hernandez.*)

A delicately fragrant lily from the Philippine Islands, with pure waxy white, usually solitary flowers, tinged green near the base, 6 to 9 inches long and 4 to 6 inches wide. It is best suited for pot culture in the Northern States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture.*)

On account of its narrow leaves it will probably not be of any great importance except possibly in breeding work.

41316 to 41341.

Collected by Mr. O. F. Cook, of the Bureau of Plant Industry, on the Yale University–National Geographic Society Expedition to Peru. Received October 5, 1915. Quoted notes by Mr. Cook, unless otherwise indicated.

41316. Passiflora sp. Passifloraceæ. **Tumbo.**

"(No. 228. Tinta, Peru, April 16, 1915.) Seeds collected in the Vilcanote Valley, at an altitude of more than 10,000 feet. A large vine with deeply 3-parted leaves, very rugose and deeply veined above, cottony white below, petioles and young stems also with cottony pubescence; petals pale pink, slightly darker than the lobes of the calyx, the fringe bright blue, less than half as long as the petals, but more than a third as long, rising from a white fleshy ring that borders the mouth of the tube; fruit strongly pubescent when young, more thinly so when mature, becoming pale yellowish or speckled and tinged with dull purplish on the exposed side. On account of the texture, pubescence, and the colors the surface of the fruit has somewhat the appearance of a light-colored peach. The shape of the fruit is nearly globose, but the ends are distinctly flattened; length 5 cm., width 5.7 cm. The outer wall of the mature fruit separates readily from a soft white inner skin which adheres closely to the pulp mass and holds it together, so that the outside shell can be broken away without danger of losing the pulp or seeds, the pedicel serving as a convenient handle during the operation. The inner skin can then be pulled away or eaten with the pulp. The ready separation of the wall into the two layers may give this species an advantage as a table fruit, for it can be eaten, like a kid-glove orange, without wetting the fingers, or it can be brought to the table ready to eat, with the outer shell taken off, but the pedicel left as a handle. The pulp mass, in addition to being held together by the inner skin, is rather firm. The flavor of the pulp is excellent, very pleasantly acid, and perhaps more like a cherry than any other temperate fruit with which it might be compared. The seeds are also somewhat smaller than those of most of the species that are grown for their fruits. The vine is a very beauti-

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

ful climber and the flowers are magnificent, not so strikingly colored as some of the passion flowers, but a very attractive pink."

41317. Mutisia sp. Asteraceæ.

"(No. 834. San Miguel and Torontoy, Peru, June 9, 1915.) Seeds of a large trailing vine with a magnificent flower. The rays attain a length of nearly 5 cm. and are recurved against the involucre, which is covered with long, recurved, channeled scales, appearing spinelike and suggesting a thistle, but not stiff or sharp. The flowers are pendent and have a stalk 6 to 10 inches long. The rays are orange at the base, passing through scarlet and scarlet red and then to deeper shades, finally discoloring to black. The anthers are dark brownish and the style yellow, tipped with red. The rays are of firm texture and evidently remain showy for a long time. several days at least. Probably would not thrive outside of a greenhouse unless in Florida or California."

41318. Lycopersicon sp. Solanaceæ. **Wild tomato.**

"(No. 1185. June 10, 1915.) Seeds of a wild tomato growing near a small watercourse between Ollantaytambo and Torontoy and about 1 league above the latter place, at an altitude of more than 8,000 feet, in a rather dry district, with cacti and other desert vegetation. Only one plant was found at the place where the fruit was obtained, though the species was noticed two or three times in other localities. The vine was large and woody, trailing over bushes 10 to 12 feet high. The foliage, flowers, and fruit have much the same form as those of the cultivated tomato. The flowers are of a bright yellow color, but the fruits remain green, even when the seeds are mature. Finally they become somewhat yellowish, but with no approach to the bright colors of the cultivated varieties. The fruit also lacks the characteristic odor and taste of the tomato, but has a pleasant, slightly acid flavor, more like that of the apple. Another difference is that the outer wall is much firmer in texture than in the cultivated tomato, and the keeping qualities are apparently very much better. Fruits collected on June 10 and brought to Ollantaytambo in a saddlebag remained apparently unchanged, with no signs of decay or withering, until July 20, and some of them were still fresh when they reached Washington in September.

"In addition to the botanical interest attaching to this plant as a wild relative of the tomato, there is the possibility of making use of it in hybridizing and breeding new varieties. If such a cross can be made, it may be expected to give a wide range of variation and yield new types of fruit adapted to special purposes, such as woody perennial varieties that can be trained over arbors like grapevines, or varieties with special flavors, greater firmness of flesh, and improved keeping qualities. An increase of hardiness might also be expected, in view of the fact that this species grows wild at a rather high altitude in a valley bordered by high mountains with perpetual snow fields. The nights are very cold, with frequent frosts during the winter season. The fruits are over an inch in diameter, several times as large as those of the red-fruited wild tomato found later at Santa Ana, from which the cultivated tomato appears to have been derived. The fruits are borne in large flat clusters on a dichotomously (?) branched inflorescence that becomes stiff and woody as the fruits mature. The Indians are said not to use the fruit, but the plant is supposed to have medicinal properties."

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

41319. Rubus sp. Rosaceæ. **Raspberry.**

"(No. 1233. Panticalla Valley, Peru, July 18, 1915.) Seeds of a raspberry of possible interest to breeders on account of the extremely large size of the fruits, which attain a length of nearly an inch and a half and a diameter of more than an inch. The color and general appearance are much like our red raspberry, but there is a solid fleshy core, like a blackberry. The vine is a large and very vigorous climber, with fresh bright-green foliage, the stems and petioles being armed with rather scattering hooked spines. The flowers are pinkish purple."

41320. Manihot dulcis (Gesner) Baillon. Euphorbiaceæ.
(*Manihot palmata* Muell. Arg.) **Sweet cassava.**

"(No. 1680. Santa Ana, Peru, July 6, 1915.) Dried fruits of the cassava plant, known in most Spanish-speaking countries as *yuca*, which is an important root crop in most parts of tropical America. In many regions cassava is a staple article of diet, as the potato is with us, and in some respects it is superior to the potato, notably in having a richer flavor. The flavor of the fresh cassava is entirely lacking in tapioca, which is the only product of cassava widely known in the United States. The cassava would be a valuable addition to the agriculture of the United States, and especially in the warmer parts of the country where the summer weather is too hot for the potato, but thus far it has remained confined to the warmest districts of the Gulf States, on account of the very long season required to mature the crop. The prospects of more general utilization of the cassava in the United States depend obviously on the possibility of securing varieties that will grow in a shorter season or with less heat. The behavior of cassava in Peru may be said at least to justify a renewed hope of securing varieties that can be raised more widely in the United States than any that have been available in the past. On the eastern slope of the Andes the cultivation of the sweet cassava extends to an altitude of 6,000 feet, and it is also grown along the Pacific coast in a climate that is cold and cloudy for much of the year. The Peruvian varieties should be tested in southern California, as well as in the Gulf and South Atlantic States."

41321. Canna edulis Ker-Gawler. Cannaceæ. **Achira.**

"(No. 1732. Peru.) Seeds of a wild species growing in the Urubamba Valley between San Miguel and Torontoy at altitudes of 6,000 to 8,000 feet. The plant is said to be the same in every respect as the cultivated *achira* of this district, except that it does not have the enlarged fleshy rootstocks. It usually grows in rather densely wooded situations and behaves in all respects like a wild plant. The plant is larger and the flowers are smaller than those of another species of Canna that grows farther down the valley at Santa Ana, and the color and shape of the flowers are also different. Unlike the Santa Ana species, the petals have little of the bright red or scarlet, but more subdued yellowish or pinkish shades not easily identified with any of the Ridgway color standards. The middle of the petals is nearly orange-chrome, but most of the neighboring colors are represented, with the margins nearly scarlet, or with various pinkish shades, or toned down into such colors as apricot-orange and the neighboring shades, rufous and carnelian red. The calyx inclines to pinkish, and the fruit spines are tinged with Pompeiian red."

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

41322. MANIHOT DULCIS (Gesner) Baillon. Euphorbiaceæ.
(*Manihot palmata* Muell. Arg.) **Sweet cassava.**

"(No. 1768. Dried fruits from San Miguel, Peru, July 10, 1915.)"

For description, see No. 1680 (S. P. I. No. 41320).

41323. CAESALPINIA PECTINATA Cav. Cæsalpiniaceæ. **Tara.**
(*Caesalpinia tinctoria* Domb.)

"(No. 1795. Seeds from Peru.) A tall, upright, spiny shrub or small tree, often planted for hedges, especially in the district around the town of Urubamba, but very abundant in the wild state farther down the Urubamba Valley, between Ollantaytambo and Torontoy, at altitudes of 8,000 to 10,000 feet. Here it grows under much the same conditions as the *molle* or pepper tree, though going into somewhat lower and drier situations. Yet the *tara* does not extend into the parts of the valley that are occupied by tropical types of vegetation, as at San Miguel, nor were any seen in the region of Santa Ana. The habit of growth and general appearance of the *tara* are striking, the trunk or trunks being strictly upright, with a few spreading branches near the top. The largest trees attain a height of 25 to 30 feet, with trunks 6 to 8 inches in diameter. The foliage is deep green in color, with the leaflets smooth and polished on the upper surface. The greenish yellow flowers in cylindrical open spikes are not very conspicuous, but the pods are produced in large clusters, and the exposed surfaces show a bright scarlet for a long time before maturing. The color affords a very attractive contrast to the leaves, and from a distance the effect is the same as though the trees were producing clusters of red flowers. In addition to the possibility of using the *tara* as an ornamental, it might have value as a hedge plant or windbreak, especially in the drier, warmer parts of the Southwestern States. The tendency of many hedge plants to spread out laterally and occupy too much ground is not shared by the *tara*, for all the shoots grow nearly upright, making a very close and effective hedge, the bark being studded with short spines. The spines may afford an objection to the use of the *tara* as an ornamental in some situations, but they will add to its value as a hedge plant. A well-grown hedge of *tara* keeps out cattle, pigs, or goats, as well as human intruders. The growth of the young plants is said to be very rapid, the wood being rather soft and not durable. New shoots are formed readily after cutting back, but there are no sprouts from the roots. No information could be secured regarding the feasibility of propagating from cuttings. The hedges about Urubamba are said to be grown from seedlings.

"A further consideration is that the pods of the *tara* might be found to have economic value for tanning or dyeing, like the *divi-divi* and other species of Caesalpinia. In former years it was customary in Peru to make ink of the pods by grinding them and adding a little sugar and yerba buena to give luster. The same preparation was used for dyeing black. The ink was said to be of good quality and continued in use in the district of Ollantaytambo until recent years, when supplies of imported ink were available. In the market in Lima *tara* pods are a regular article of trade and are said to be used for dyeing, tanning leather, and making ink.

"The immature seeds of the *tara* contain, underneath the skin, a layer of fleshy opalescent material, with a rather pleasant, slightly sweetish taste, which is considered edible, like the arillus of the seeds of Inga and

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

other leguminous trees; but in the *tara* the small size of the seeds makes it difficult to extract the edible material, which is also rather tough and tasteless.

"A few trees of *tara* or a related species were seen about Lima, but they were much less upright than those about Urubamba. If the trees should behave in this manner in California it would be much less desirable for the purposes considered above. The *tara* about Lima, however, may be a different variety. It was noticed that the pods offered in the market were broader than those of the trees of the interior valleys."

For an illustration of the tara, see Plate I.

41324. Escallonia sp. Escalloniaceæ. **Tasta.**

"(No. 1827. Seeds from Pinasniocj, Peru, July 14, 1915.) A fine-leaved tree, comparable to the boxwood in foliage, but with horizontal branches and a more open habit of growth, which often produces an artistic effect like some of the dwarfed Chinese evergreens. The appearance is also somewhat similar to that of the *chachacoma* (*Escallonia resinosa*, S. P. I. No. 41326), but the foliage is much finer and of a dark and more shining green. Like the *chachacoma*, the tree will endure cutting back to any extent, and the new crown soon takes a graceful rounded shape. This may render the *tasta* very useful for ornamental planting in situations where space is limited, and it should also serve well as a hedge plant. Old trees have deep-red heartwood of the same texture and appearance as the wood of *chachacoma*, and are said to be used in the same way. The form of the fruits also suggests affinity with that tree, and the habit of growth is similar, but the flowers are solitary instead of clustered. The color of the flowers is said to be white, as in *chachacoma*. The leaves of young vigorous shoots are much larger than those of mature branches and are distinctly dentate. Like *chachacoma* the tree may be rooted from cuttings and layered branches. It ascends to higher elevations than *chachacoma* and may be expected to have greater resistance to cold, but less resistance to heat. It may thrive along the California coast as far north as San Francisco and might become popular as an ornamental or hedge plant."

41325. Hesperomeles oblonga Lindley. Malaceæ. **Lengli.**

"(No. 1874. Dried fruits from Pinasniocj, Peru, July 14, 1915.) A tree growing at altitudes of 10,000 to 12,000 feet, found in the valleys of the two streams tributary to the Urubamba River, on the stream that enters at Ollantaytambo and the other the stream that comes down from the Panticalla Pass a few miles below Ollantaytambo. On the other side of the pass in the upper part of the Lucumayo Valley the *lengli* appears to be absent. In unfavorable places where the trees remain stunted they have an appearance somewhat like our thorn-apple or hawthorn, but in some of the sheltered ravines and reforested terraces where the conditions are more favorable the *lengli* trees attain a height of 30 to 40 feet, with trunks 1 to 2 feet in diameter having a very attractive appearance. The foliage is very fine, the leaves being of a very regular elliptical shape with slightly dentate margins. The upper surface is of a fresh deep-green color with neatly impressed veins, while the lower surface has a warm reddish brown tomentum, affording a very pleasing contrast. The fruit clusters give a festive appearance like holly, the mature berries being deeply and richly colored. They begin by changing from green through various shades of pink to

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

scarlet red and then pass on through the darker shades of red, becoming eventually almost black. The berries are distinctly flattened instead of round and have the appearance of very small apples. They hang on the trees for a long time, probably all through the winter, with the effect of the Christmas holly. A botanical peculiarity, perhaps of this species, is that the lowest branch of the fruit cluster is usually subtended by a very much reduced, oval, sharp-pointed leaf or bract, but is like the other leaves in color, texture, and persistence. The small leaf adds a little touch to the appearance of a twig with its cluster of berries. This tree might prove attractive for ornamental planting along the California coast or wherever it will grow. In view of the high altitude where the tree is native it may be expected to stand cold weather, if not actual frost."

For an illustration of the lengli, see Plate II.

41326. Escallonia resinosa (R. and P.) Persoon. Escalloniaceæ. Chachacoma.

"(No. 1886. Seeds from Ollantaytambo, Peru, July 14, 1915.) A handsome tree, bearing clusters of white flowers. It is common in the valleys about Ollantaytambo at altitudes of 9,000 to 11,000 feet. In the lower valleys, where the climate is dry, the *chachacoma* grows intermingled with cacti and other desert vegetation and seldom attains a height of more than 12 to 15 feet. In the upper valleys, where the climate is cooler and the supply of moisture is ample, the *chachacoma* trees grow to much larger size, often attaining a height of 40 to 50 feet and a diameter of 2 to 4 feet. The largest trees were seen in the valley below Panticalla Pass, on the south side, but none were found on the north side, in the region of Yanamachi."

For an illustration of the chachacoma, see Plate III.

41327. Citharexylum sp. Verbenaceæ.

"(No. 1888. Dried fruits from Pinasniocj, Peru, July 17, 1915.) A tree or shrub with small yellowish green leaves and slender, square, angular, green branches. Grows in the dry lower valleys as a bush, but in favorable situations attains a diameter of over a foot. The general appearance is somewhat like box when the foliage is close, as in the dry valley between Torontoy and Ollantaytambo. It might be expected to grow in the same places as the California pepper tree (*Schinus molle*) and would serve better than that tree as a hedge or windbreak. It stands severe cutting back and apparently springs up rapidly. The mature berries are red. Those collected were from trees about a league below Pinasniocj at an altitude of about 10,000 feet."

41328. Prunus salicifolia H. B. K. Amygdalaceæ. Capuli.

"(No. 1913. Seeds from Ollantaytambo, Peru, July 19, 1915.) A tree very common throughout the Urubamba and Vilcanota Valleys at altitudes of 12,000 feet and under. The lower limit of the *capuli* in the Urubamba Valley is near Torontoy at an altitude of about 8,000 feet. The flowers and fruits are borne in clusters, and the general appearance is much like the chokecherries of the United States, but the fruit is unlike the chokecherry in having a thick, firm flesh and an agreeable taste. Though not highly flavored, it is pleasant and juicy and of good texture and is sold in quantities in the markets of Cuzco and other towns of the plateau region. It is the only kind of cherry that is grown in quantities in this region. The ripe fruit begins to appear on the market in Novem-

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

ber and continues until April, coming probably from different altitudes. The size is that of a rather small cherry and the color a deep reddish purple, becoming nearly black with maturity. The leaves, stems, and bark are strongly charged with prussic acid and are very bitter to the taste. The trees are usually 20 to 30 feet high, but often of large size, 40 feet or over, with trunks 2 feet in diameter. Many are found in a wild or half-wild state, quite independent of cultivation. This was observed particularly in the neighborhood of Sicuani at an elevation of about 12,000 feet. Nevertheless, it is not certain that the species is a native of Peru. At Lima the same name, *capuli*, is applied to an altogether different type, a small plant of the genus Physalis, related to the tomato, but with the fruits small and inclosed in a large papery calyx like the so-called strawberry tomato, known in some parts of the United States. As the capuli tree appears to be a healthy, vigorous, rapid-growing type, it may be worthy of a trial along the Pacific coast. The possibility of using it as a stock for other cherries or for the production of desirable hybrids is also worth considering, but the species is not closely related to our cultivated cherries and may need to be looked upon as a distinct type to be improved through selection rather than by hybridization."

41329. DATURA SANGUINEA Ruiz and Pavon. Solanaceæ.

Puca campacho.

"(No. 1915. Peru, July 14, 1915.) Seeds from above Pinasniocj, Panticalla Pass, at an altitude of about 12,000 feet. A large treelike species, somewhat smaller than *D. arborea*, with smaller leaves and more narrowly tubular flowers. The corolla tube is green at the base, orange yellow in the middle, and scarlet at the mouth. In addition to these striking differences, the species should be much more hardy than *D. arborea*, which appears in Peru to be a native of the lower tropical valleys, while *D. sanguinea* extends to the high altitudes where heavy frosts are encountered every night."

41330. LUPINUS CRUCKSHANKSII Hooker. Fabaceæ. **Tarhui.**

"(No. 1919. Seeds from Ollantaytambo, Peru, July 20, 1915.) Apparently a native species, commonly cultivated at altitudes of 9,000 to 11,000 feet. The pods are very thick and fleshy, with distinct but not prominent irregular veins; the surface glaucous and somewhat pubescent, but not very densely so. Flowers very handsome, the banner erect, blue at the sides, then white, but yellow in the lower half of the middle, the lower petals deeply blue, covering the whitish keel. Flowers usually in whorls of five, four, or three. Leaves naked above, sparsely hairy beneath, glaucous. Seeds pure white. Said not to yield very well. After being ground into meal this has to be soaked several days in running water to extract the bitter taste; considered a delicacy, notwithstanding the difficulty of preparation."

41331. PASSIFLORA sp. Passifloraceæ. **Tumbo.**

"(No. 1922. Seeds from Ollantaytambo, Peru, July 19, 1915.) Leaves somewhat like that of the Tinta species, but upper surface much smoother and under surface not so cottony. Flowers without fringe, very similar to those from Tinta, except for the absence of tentacles, involucre with bracts united, and fruit with yellow pulp, attaining a length of 3 cm. and a width of 4 cm. The skin surrounding the pulp very thin and tough, surface of fruit strongly pubescent, with simple

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

erect hairs, but surface of calyx tube naked. The pulp has a rather strong, distinctly acid taste, quite different from most other edible Passifloras. It might not find favor with the American public, but is distinctly worth trying. There is a decided tang, something like that of a tomato. The plant is found commonly growing by roadsides around Ollantaytambo, in places altogether uncultivated, and may be considered a native of this district."

41332. Lucuma obovata H. B. K. Sapotaceæ. **Lucuma.**

"(No. 1925. Seeds from Ollantaytambo, Peru, June 10, 1915.) The *lucuma* is a popular fruit tree in Peru. It is closely related botanically to the *sapote* and *injerto* of Central America, but the quality of the fruit is entirely different. The flesh is very rich and mealy, more like a cooked sweet potato than like the related fruits. The tree is also of a very compact habit of growth, with the rather small obovate leaves clustered closely near the ends of the branches. Another difference is that the *lucuma* grows and produces fruit at a much higher altitude than the sapote, attaining about 9,500 feet at Ollantaytambo, so that there would seem to be a much better chance for the *lucuma* in California or Florida than for the sapote."

41333. Caesalpinia pectinata Cav. Cæsalpiniaceæ. **Tara.**
(*Caesalpinia tinctoria* Domb.)

"(No. 2046. From Peru, July 17, 1915.) Seed from Urubamba Valley, between Torontoy and Ollantaytambo. Like S. P. I. No. 41323, but from a different tree."

41334. Juglans sp. Juglandaceæ. **Nogal.**

"(No. 2047. Seeds from Ollantaytambo, Peru, July 22, 1915.) A native walnut cultivated sparingly at Ollantaytambo and in the valley above and below. Its chief use is to furnish a dye to give sheep's wool the brown color of the high-priced vicuña ponchos. The leaves and bark of the tree are used for dyeing, the coloring material being extracted by beating and boiling. The nuts are as large as English or Persian walnuts, but the shell is much thicker. The tree is rather small and slender, with large graceful leaves, reminding one of the sumac or Ailanthus. Of interest for breeding purposes or for ornamental planting along the Pacific coast or in Florida. Probably a native of the valleys of the eastern slopes of the Andes."

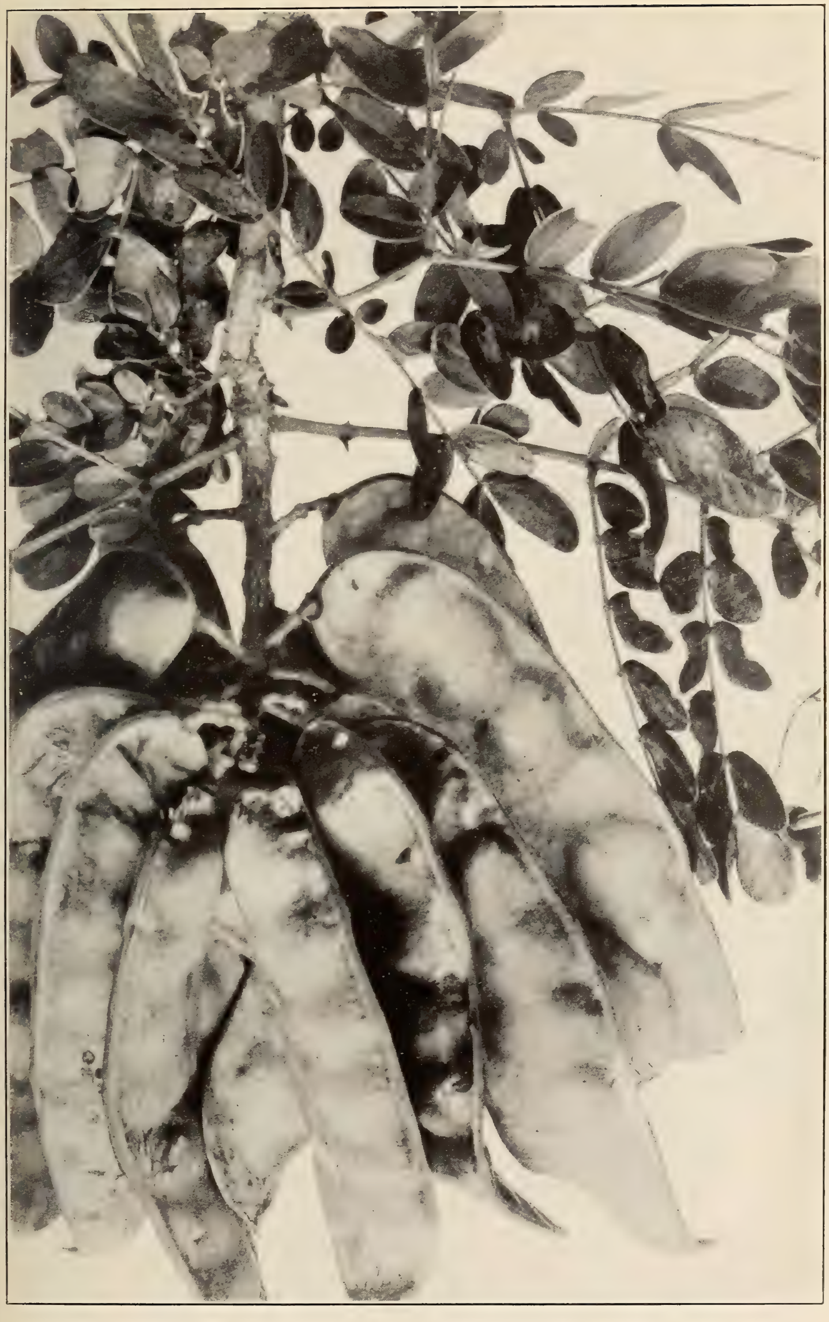
41335. Chenopodium hastatum Philippi. Chenopodiaceæ. **Cañihua.**

"(No. 2148. Seeds from Cuzco, Peru, July 20, 1915.) A second cultivated species of Chenopodium, grown only at very high altitudes. Seen only in the valley on either side of the Pass of La Raya. Both the plant and the seeds are much smaller than the *quinoa*. *Cañihua* is usually planted after potatoes, with no attempt at other cultivation. The seeds are toasted and ground into meal. The cañihua is used chiefly as a travel ration and by shepherds who go out with their flocks on the Andean pastures."

For an illustration of the cañihua, see Plate IV.

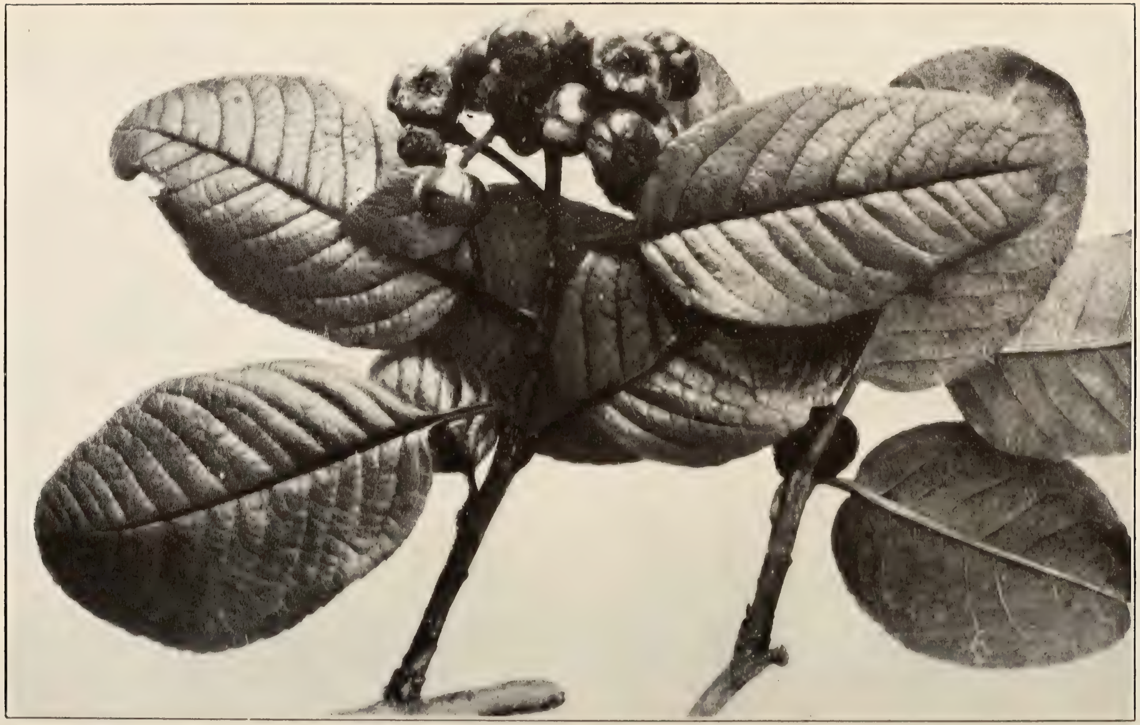
41336. Cucurbita sp. Cucurbitaceæ. **Zapallo macri.**

"(No. 2049. Seeds from Lima, Peru, August 16, 1915.) Very large fruits, attaining 2 feet in diameter, globose-ovate, fusiform, or depressed. Surface either light gray, deeper bluish gray, or yellowish, smooth or with shallow furrows or with scattered corky lines."



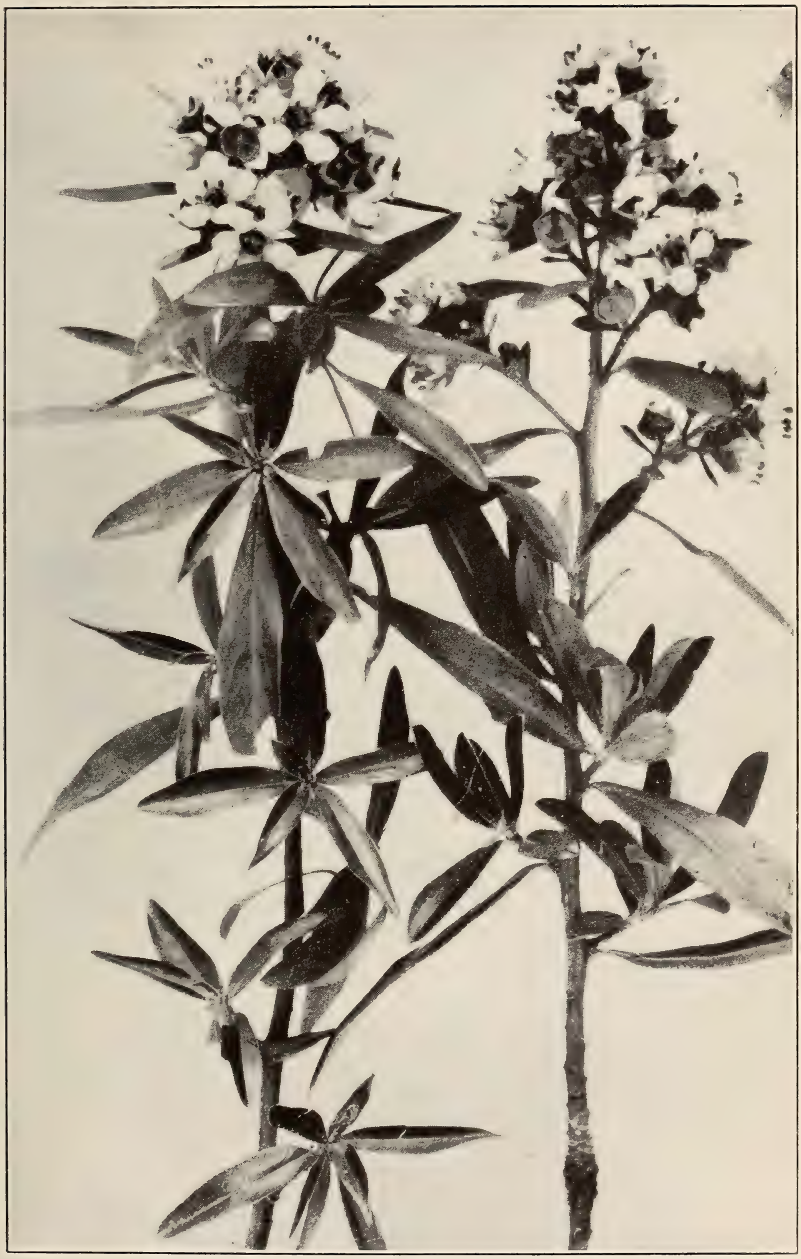
THE TARA, A NEW PLANT FOR HEDGES AND WINDBREAKS, FROM PERU (CAESALPINIA PECTINATA CAV.), S. P. I. NO. 41323.

An upright shrub or small tree, often planted for hedges in parts of Peru. The habit of growth of the tara peculiarly fits it for a hedge plant or windbreak. The trunk or trunks are upright, with a few spreading branches near the top, and the bark is studded with short spines. Tara pods are a regular article of trade in the market of Lima, and are said to be used for dyeing, tanning leather, and making ink. This plant should prove valuable in many situations in the South. (Photographed, natural size, by the Yale University-National Geographic Society Expedition, July, 1915; P17974CA.)



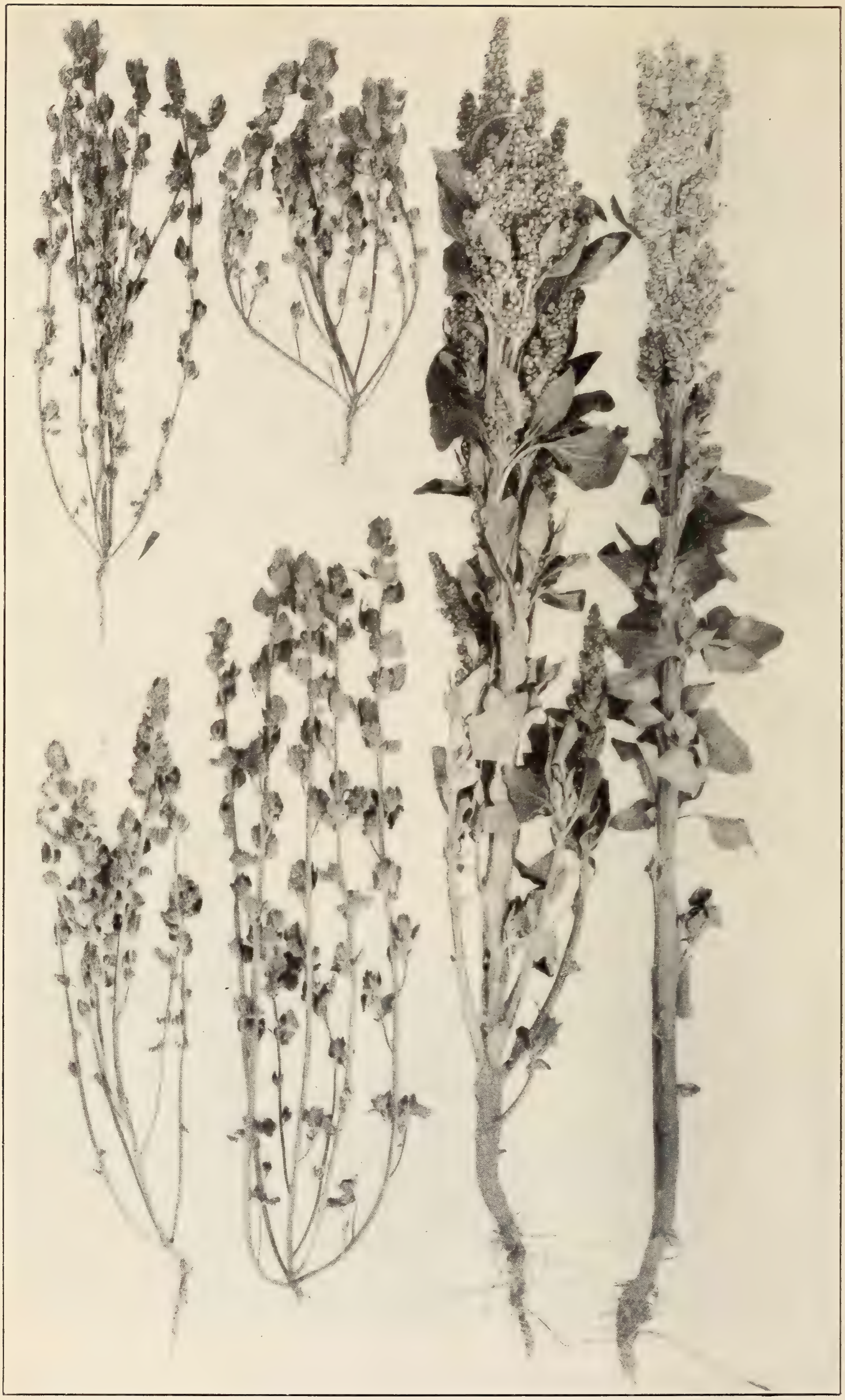
THE LENGLI, AN INTERESTING ORNAMENTAL TREE OF PERU (HESPEROMELES OBLONGA LINDLEY), S. P. I. NO. 41325.

This tree, commonly known as the lengli, grows in the mountains of Peru at altitudes of 10,000 to 12,000 feet. Where conditions are favorable, the tree attains a height of 30 to 40 feet, with a trunk diameter of 1 to 2 feet. The oval leaves are green above and reddish brown tomentose beneath. The fruit is richly colored, being pink when young and passing all the stages of red until almost black when ripe. The mature fruit hangs on the tree for a long time. The tree may be expected to stand cool weather and even frost. (Photographed, slightly reduced, by the Yale University-National Geographic Society Expedition, July, 1915; P18045CA.)



THE CHACHACOMA OF PERU (ESCALLONIA RESINOSA (R. AND P.) PERSOON), S. P. I. No. 41326.

A handsome tree, producing clusters of white flowers for a long period during the winter months. It thrives in the high valleys of Peru at altitudes of 9,000 to 11,000 feet. Here it attains a height of 40 to 50 feet and a diameter of 2 to 4 feet. In the lower valleys, where the climate is dry, this tree grows intermingled with cacti and other desert vegetation, but it seldom attains there a height of over 15 feet. It has not heretofore been grown in the United States. (Photographed, natural size, by the Yale University-National Geographic Society Expedition, July, 1915; P17890CA.)



THE CAÑIHUA, A CULTIVATED FOOD PLANT FROM THE HIGH ANDES (CHENOPODIUM HASTATUM PHILIPPI), S. P. I. NO. 41335.

The shepherds who live in the higher altitudes of the Peruvian Andes use the seeds of this plant for food. The seeds are toasted and then ground into meal and used principally as a travel ration, quantities of it being taken by the shepherds when they go out with their flocks on the Andean pastures. The plant and seed are much smaller than the better known quinoa. This species is grown only at very high altitudes. It was seen by Mr. O. F. Cook only near the Pass of La Raya. The photograph shows seedlings (much reduced) in different stages of development. (Photographed by the Yale University-National Geographic Society Expedition, July, 1915; P17786CA.)

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

41337. Cucurbita sp. Cucurbitaceæ. **Zapallo abin.**

"(No. 2050. Seeds from Lima, Peru, August 16, 1915.) A medium-sized squash of the same general form as the *loche*, but much larger and distinctly grooved. Rough with coarse warts, which are sometimes confluent, but usually distinct. Color on the outside, deep dull salmon yellow, in places finely mottled with olive green; on the inside, deep yellow. Flesh much thicker at the neck than at the large end, but neck not solid."

The *loche* is a squash of the general form of the ordinary crookneck, but with straight neck. No seeds of this plant were received.

41338. Solanum sp. Solanaceæ. **Sacapari.**

"(No. 2052. Dried fruits from Copacabana, Bolivia, August 8, 1915.) A hardy species, with bluish violet flowers, apparently the same as that obtained near Puquiura, on the border of the Anta Plain in Peru, between Huaroconda and Cuzco, at an altitude of about 12,000 feet. At Copacabana it blossomed profusely in midwinter, when no other plants were flowering. Shrub not so large as the Puquiura one, 3 to 5 feet, but woody. To keep in good condition it would probably need pruning or cutting back to the ground occasionally, but would probably live for many years, and could be used as a hedge or screen. The fruits turn a transparent reddish yellow at maturity, but are black when dry. How much frost it will endure is not known, but a plant that will endure freezing every night in the blossoming season should be of interest throughout the Southwest. At Copacabana the name *sacapari* was given for this plant."

41339. Carica sp. Papayaceæ.

"(No. 2053. July 22, 1915.) Seeds of a *papaya* tree of nearly the same size and general appearance as the familiar type, but with the fruits much smaller and more deeply grooved. The flesh is inferior in texture to that of the ordinary *papaya*, but greatly superior in odor and taste, and probably also in keeping qualities. A thoroughly ripened fruit was kept for two weeks under ordinary living-room conditions and still showed no sign of decay. The tree has a more rounded and compact leaf crown than *Carica papaya*, the leaves having much shorter petioles. Another apparent difference is that the fruits are not so closely confined to the leafy portion of the trunk, but are borne well down on the stem. Fruit 9 to 11 cm. long by 5.5 to 7 cm. wide, with flesh 1 cm. or less in thickness, rather tough and elastic, though becoming somewhat softened and turning yellowish with maturity. The odor is very delicious, like a high-grade, well-ripened muskmelon, and the flavor also is excellent, the deficiency lying in the texture of the flesh. The seeds have the taste of capers. As the species appears to be a rather close relative of *Carica papaya*, crossing seems likely to succeed, and if the good flavor and the keeping qualities of the Peruvian species can be combined with the large size and abundant fruiting of *C. papaya* a really acceptable melon tree would result. The *papaya*, improved by the addition of a more attractive flavor and better keeping qualities, might become an important commercial fruit, for it thrives in southern Florida, and commercial production on a larger scale would be feasible there and perhaps also in the warm districts in southern California. From the standpoint of ease of production few plants are more promising than

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

the *papaya*. The trees grow with great rapidity and are extremely prolific. It is known that superior varieties can be propagated asexually, both by budding and by rooted cuttings."

See Circular No. 119, Bureau of Plant Industry, for methods of propagation.

41340. Chenopodium quinoa Willd. Chenopodiaceæ. **Quinoa.**

"(No. 2154. Cuzco, Peru, July 27, 1915.) Seeds of a large pigweed extensively cultivated in the high plateaus of Peru. The seeds are eaten prepared in various ways, but the principal use is for making a kind of *chicha*, or native beer. Before the introduction of barley and wheat from Spain, *quinoa* and *cañihua* were probably the only seed crops grown in the more elevated parts of Peru. Potatoes are always the principal crop, with *quinoa* and *cañihua* next, following with the other tubers, *oca*, *anyu*, and *ullucu*. *Quinoa* presents many color variations in the plants as well as in the seeds, especially in the direction of reds and purples. The colored seeds are used almost exclusively for making *chicha*, the white seeds being preferred for eating. A possibility of utilizing the *quinoa* in the United States lies in its use as a breakfast food. Some pronounce it as good as oatmeal, and one resident Scotchman even insisted that it was better. From a crop standpoint, too, the plant appears rather promising, being very vigorous and productive. It is of erect habit, has a strong central stalk, and forms compact heads, heavy with seed. There is no reason why it should not be gathered and thrashed by machinery."

For an illustration of the quinoa, see Plate V.

41341. Cyphomandra calycina Sendt. Solanaceæ. **Tree tomato.**

"(No. 2058. Seeds from Ollantaytambo, Peru, July 29, 1915.) The plant attains a height of 4 to 5 feet with a single erect central stalk and spreading horizontal branches like a small, flat-topped tree. The leaves are entirely different from those of the tomato, being simple, entire, and broadly oval. The surface of the leaves, as well as the petioles and branches, is covered with a very short, minute, soft, velvety pubescence. The method of branching is peculiar, as there appear to be two leaves on some of the joints, those above the inflorescence, while the other internodes have a single leaf. The buds are tinged with purplish pink, but the mature flowers are nearly white. The fruits have a pointed oval or fusiform shape and are borne in pendent clusters from near the ends of the branches. The largest fruits found in the market of Cuzco measured 7 by 5 cm. The largest diameter is somewhat below the middle of the fruit, the end being more pointed than the base. The colors are Brazil red on the more exposed surfaces and cadmium orange on the lighter parts, with many intermediate shades either in solid color or finely mottled. The skin is thicker and tougher than that of the tomato and the outer layer of flesh firmer. The placenta is large and fleshy, completely filling the interior of the fruit, the seeds being confined mostly to a narrow zone between the outer walls and the placenta. The freshly cut fruit has a pronounced odor, as strong or stronger than that of the tomato, but of a somewhat different quality. The taste, while much nearer to that of the tomato than to any other fruit, is distinctly different. Some might find it more pleasant and others not. In any event the fruit is distinctly edible, and the plant laden with its fruits is curious enough to be grown for its own sake and to allow the possibilities of the fruit to be tested. The habits

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

of the plant in Peru indicate that it will grow in a colder climate than the tomato. The natives plant their seed beds (huambales) in July or August and transplant in December, the plants making a very rapid growth during the wet summer months from December to March and ripening their crop in the fall. In the United States the growing period could probably be much shortened, on account of our warmer weather in the spring. The Indians wet the earth with boiling water before planting the seed, to kill or drive away insects that might otherwise attack the young seedlings. They also enrich the soil with sheep or guinea-pig manure. In Urubamba Valley this plant has no other name than *tomate,* which it shares with the true tomato, but this causes no confusion, for the Cyphomandra is confined to the higher elevations and Lycopersicon to the lower valleys."

41342 to 41356. TRITICUM spp. Poaceæ. **Wheat.**

From Pusa, India. Presented by Mr. Bernard Coventry, Imperial Economic Botanist, Pusa, India, through the superintendent, Agricultural College Farm, Poona, India. Seed received October 4, 1915.

41342 to 41344. TRITICUM DURUM Desf.

41342. *Hansia Broach.*

41343. *Potia Nadiad.*

41344. *Shet Parner.*

41345 to 41350. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

41345. *Mundi of Ludhiana.*

41346. *Paman of Sirsa.*

41347. *Daudkhani,* or *Daudakhani.*

41348. *Popatia Nadiad.*

41349. *Siok.*

41350. *Deshi Athani.*

41351 and 41352. TRITICUM DURUM Desf.

41351. *Kopergaon Baxi,* or *Kopergum Baxi.*

41352. *Black-awned Athni.*

41353. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

Lal of Batala or *Lal of Batalu.*

41354. TRITICUM DURUM Desf.

Bansi of Baleghat, or *Bansi of Buleghat.*

41355 and 41356. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

41355. *Australian.*

41356. *Pivla pote.*

41357 to 41360. CASTANEA PUMILA × CRENATA. Fagaceæ. **Hybrid chestnut.**

Produced by Dr. Walter Van Fleet at Little Silver, N. J. Quoted notes by Dr. Van Fleet.

Plants growing at the Plant Introduction Field Station, Chico, Cal.

"A hybrid between the American chinkapin and the Japanese chestnut. Bears at one to three years from seed. A good producer and quite resistant to the chestnut-bark fungus. Nuts large, of fair quality, with rather hard shells."

41357. "The nuts are somewhat larger than ordinary American chestnuts and somewhat sweeter."

41457 to 41360—Con. (Quoted notes by Dr. Walter Van Fleet.)

41358. "Much the same as S. P. I. No. 41357; possibly slightly better in flavor and tenderness of flesh."

41359. "Trees of this number bear much larger nuts than those of either of the two preceding. The nuts are much larger than the American type, about the size of a Spanish chestnut, and are very sweet."

41360. "Tree 26. These are nuts of high quality, much the same in size and flavor as S. P. I. No. 41359."

41361 to 41371. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

From Okitsu, Japan. Cuttings presented by Prof. Ishiwara, Horticulture Experiment Station. Received October 9, 1915.

Numbered from 1 to 10; also one package of mixed numbers.

41372 to 41383.

From Poona, Bombay, India. Cuttings presented by Mr. W. Burns, Economic Botanist, Agricultural College. Received October 9, 1915.

41372 to 41376. OPUNTIA spp. Cactaceæ. **Prickly-pear.**

41372. OPUNTIA sp.

41373. OPUNTIA DILLENII (Ker-Gawler) Haworth.

41374 and 41375. OPUNTIA spp.

41376. OPUNTIA ELATIOR Miller.

41377. NOPALEA COCHENILLIFERA (L.) Salm-Dyck. Cactaceæ. **Cochineal cactus.**

"A cactus with fleshy, obovate, unarmed branches, native of Mexico, but cultivated on a large scale, especially in the Canary Islands, for cochineal breeding. This is not the only plant which is suited for this purpose; there are several other kinds, characterized by unarmed branches, used for the same purpose; the reason for the choice of this is obvious, because the workmen are not injured by spines. Cochineal, the well-known, splendid, very brilliant color, is produced from the bodies of the scale insect (*Coccus cacti*), killed by means of steam. Since the developmen of the aniline-dye industry this branch of agriculture, which was extremely profitable to the above islands, has gone down and become practically unremunerative." (*Engler and Prantl, Pflanzenfamilien.*)

41378 to 41383. OPUNTIA spp. Cactaceæ. **Prickly-pear.**

41378. OPUNTIA FILIPENDULA Engelmann.

41379 to 41381. OPUNTIA spp.

41382. OPUNTIA DECUMANA (Willd.) Haworth.

41383. OPUNTIA FICUS-INDICA (L.) Miller.

41384. ANNONA sp. Annonaceæ.

Seeds from Cajabon, Guatemala. Presented by Mr. Walter F. Curley. Received October 7, 1915.

"*Tzumuy Pac*, so called here in the Indian language. I had never seen them until some Indians brought them in; they say they are quite common on the mountain of Chaal near the British Honduras border. They are quite small, yellow outside with corrugated skin, and resemble the larger fruit *sincuya* (*Annona purpurea*). There is very little inside to eat, but that is of fine flavor. The seeds are very abundant. Ripens in the district of Cajabon, Guatemala, in September." (*Curley.*)

41385. FERONIELLA LUCIDA (Scheff.) Swingle. Rutaceæ.
(*Feronia lucida* Scheff.)

Seeds from Buitenzorg, Java. Presented by the director of the Botanic Garden. Received October 2, 1915.

"*Kavista batu.* Small spiny tree, native to Java; leaves odd-pinnate, 3 to 6 paired; leaflets oval or obovate, coriaceous, shiny above, margins entire or slightly crenulate, obtuse or emarginate at the apex; petioles pubescent, the terminal leaflet sessile; rachis pubescent, articulated; flowers perfect or by abortion male, fragrant, white, rather large; sepals small, linear, pubescent; petals pointed oval; stamens four times as many as the petals; fruit globose, 2½ to 2¾ inches in diameter; seeds small, with a thin hard testa, immersed in the glutinous pulp. The pulp is sometimes eaten in Java, like that of the wood-apple (*Feronia limonia*). It grows wild in the drier parts of Java, and has been introduced into the United States, where it is being tested by the Department of Agriculture as a stock for citrus fruits." (*W. T. Swingle.* In *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1220.*)

41386 to 41388. CITRUS spp. Rutaceæ.

Seeds from Manila, Philippine Islands. Presented by Mr. P. J. Wester, Lamao Experiment Station. Received October 4, 1915.

41386. CITRUS MEDICA L. **Citron.**

"A small primitive citron." (*Wester.*)

41387. CITRUS SOUTHWICKII Wester. **Limao.**

"(No. 2049.) *Limao.* A thorny tree, with dense head and drooping branches, attaining a height of 6 meters. The *limao*, though rare, is not uncommon in Bohol, where it is cultivated, and it has also been collected by the writer in Baganga, Mindanao. The flowers appear late in April and during the early part of May, with the fruit ripening in January and February. A few fruits nearly full grown were collected in May. This plant has flowered irregularly from May to December. The fruit is not eaten, but is used in washing by the Boholanos. It is of no economic importance. The tree is evidently quite drought resistant and succeeds well in very scanty soil underlain with limestone. The *limao* belongs in that group of the citrus fruits having free filaments, the most conspicuous characters being the compact growth of the crown, the dark-green, thick, and distinct leaves, the almost sessile stigma, and the attractive, oblate, regular-shaped fruit with its many locules, exceeding in number those in any other citrus fruit known to the writer. This species has been named in honor of Mr. E. F. Southwick. For a full description, see The Philippine Agricultural Review, first quarter, 1915. Fruits scarcely edible; plant may make a good stock." (*Wester.*)

41388. CITRUS WEBBERII MONTANA Wester. **Cabugao.**

"(No. 2266.) *Cabugao.* Seeds from plant from which this species was described. Fruit makes a fair ade." (*Wester.*)

"A shrubby tree with slender branches and small, weak spines, sometimes absent; young growth green; leaves 8.5 to 14 cm. long, 3 to 3.5 cm. broad, ovate to ovate-oblong, crenate, dark green above, shining, base broadly acute to rounded, apex blunt pointed, usually retuse; petiole 24 to 38 mm. long, with narrow wing margin, in large leaves sometimes 17 mm. broad; flowers not seen; fruit roundish oblate, about 45 mm. across, somewhat corrugate, 8-loculed. The general character of the plant and fruit indicates that the *cabugao* is a form of the *alsem* (*Citrus webberii*)." (*Wester The Philippine Agricultural Review, vol. 8, p. 14, first quarter, 1915.*)

41389 and 41390. Amygdalus persica L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

Seeds from Smyrna, Turkey. Presented by Mr. George Horton, American consul general. Received October 9, 1915.

41389. "Freestone peaches, grown in the Vilayet of Aidin." (*Horton.*)

41390. "Clingstone peach, grown in the Vilayet of Aidin." (*Horton.*)

41391. Homoioceltis aspera (Thunb.) Blume. Ulmaceæ.
(*Aphananthe aspera* Planch.)

Seeds from Augusta, Ga. Presented by P. J. Berckmans Co. Received October 5, 1915.

An ornamental ulmaceous tree up to 60 feet high, having the appearance of a hackberry (*Celtis occidentalis*), with the slender branches forming a dense head. Leaves ovate to ovate-oblong, broadly wedge shaped at the base, tapering at the apex, 2 to 3½ inches long, serrate, with straight veins ending in the teeth. (This last character easily distinguishes this tree from *Celtis sinensis*, with which it has often been confused.) The greenish flowers and small black drupes are inconspicuous. Not hardy north of Georgia. (Adapted from *Rehder*. In *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 308.*)

41392. Uvaria calamistrata Hance. Annonaceæ.

Seeds from Hongkong, China. Presented by Mr. W. J. Tutcher, superintendent, Botanical and Forestry Department. Received October 11, 1915.

"A native of Hongkong. This is a strong-growing creeper which produces an edible fruit of a very pleasant, slightly acid taste." (*Tutcher.*)

41393. Licania platypus (Hemsl.) Fritsch. Rosaceæ. **Sansapote.**

Seeds from San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received October 14, 1915.

"Inferior to the species from the Atlantic coast, as it has little flesh; large fruits still sell even here in Orotina, 1½ leagues from where it grows wild, for 5 cents apiece, and smaller ones two for 5 cents. One of the most beautiful of all forest trees; of gigantic size; timber nearly as good as Cedrela." (*Wercklé.*)

41394. Belou marmelos (L.) Lyons. Rutaceæ. **Bael.**
(*Aegle marmelos* Correa.)

Seeds from Lahore, India. Presented by the superintendent Government Agriculture-Horticulture Gardens. Received October 14, 1915.

See S. P. I. Nos. 38664, 41002, and 41133 for previous introductions.

41395. Amygdalus persica L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

Seeds from Kiayingchow, Swatow, China. Presented by Rev. George Campbell, through Mr. George C. Hanson, American consul, Swatow, China. Received October 11, 1915.

"Peach pits from a curious little tree grown here only in pots as a house plant. The leaves are like other peach leaves, but its manner of growth is quite different. This particular tree is now just 15 inches high and had five full-sized peaches, somewhat smaller than American ones. I broke off two or three other fruits when quite small. They are borne on the main trunk on stems about a quarter of an inch long and make one think of papayas. The lowest was 6 inches from the earth of the pot and the highest 8 inches, so the five were closely crowded together. The trunk at this point is little, if any, larger than a lead pencil. The fruit is of good color, as Chinese peaches go, and taste better than any others I have eaten in China. The flesh is white and it clings to the pit. The fruit hangs on the tree a very long time and is quite ornamental. The blossoms are quite showy, too. The Chinese say it comes true from the pits. I picked the last one yesterday, and the first was ripe a month ago. The ordinary peaches here are very poor—not fit to eat unless cooked." (*Campbell.*)

For an illustration of this peach, see Plate VI.

41396 to 41400. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

Seeds from Barcelona, Spain. Presented by Mr. Carl Bailey Hurst, American consul general. Received October 14, 1915. Quoted notes by Mr. Hurst.

"The peach tree of Spain is said to be of Persian origin and its numerous varieties as found here to-day may be divided into four classes—the common peach, or *Albérchigo,* the fruit of which has a yellow and red skin; the *Abridor,* the fruit of which has white, tender flesh; the *Pare,* the fruit of which is fine and succulent, and the *Bruñón,* the fruit of which has a hard flesh and strong, tenacious skin. From these four kinds 44 varieties have been developed. Those most cultivated here are divided into two groups, those planted in the spring and those planted in the fall. The spring peaches, which ripen in June and July, are known as *temprano,* or early, the varieties of which found chiefly here are *Magdalena Rojo, De Malta, Canciller,* and *Valenciano.* Seeds of the fall peaches known as *tardio,* or late, can not be had at present in any of the peach stores of Barcelona.

"Spanish peach trees are planted in well-fertilized soil, the depth varying according to the quality and nature thereof and local weather conditions. A piece of bone is placed at the bottom of each hole made in the soil before planting. From the experience of local horticulturists it has been found that the use of a mixed vegetable and animal fertilizer is best adapted to the growth of the young peach trees. The earth around the planted tree should be worked frequently. The planting of peach trees too close to garden or other walls is found to be highly prejudicial to their development, and in transplanting they should be placed not nearer than 1 foot away. During the first three or four years much attention is devoted to the pruning of Spanish peach trees, in order to develop symmetric growth and enable the sap to distribute itself proportionately in all parts. Argillaceous or very cretaceous soil is not found advantageous to peach culture here, as in such soil the roots can not extend freely. If the soil be too damp, the fruit becomes insipid and matures late. Where the soil is sandy the fruit produced is more aromatic, but less juicy. The soil preferred for peach culture in Spain is a turfy mellow loam of a calcareous nature. The seed of the cultivated peach is very rarely planted here, as the growth of the tree is so slow that four years are required to produce fruit. When, however, it is planted by the nurseryman, it is usually done in the month of March. The Spanish horticulturist prefers to plant a wild-peach seed which grows rapidly and gives at the end of a year a stock upon which a cultivated peach bud may be grafted. The budding is generally done in August, but may also be performed in May or September. The incision is made from 4 to 6 inches above the ground. Preferable here to grafting on the wild-peach stock is grafting the cultivated peach on the almond or cherry stock, which is stronger and not so susceptible to climatic changes. Fruit is obtained sooner and the life of the tree lengthened, because the peach tree does not usually live more than 8 to 10 years here. For this reason the almond is preferred to the cherry, although both are adapted to this purpose, as they grow rapidly and are long lived."

41396. "No. 1. Wild peach."

41397. "No. 2. *Magdalena Rojo.* This peach is the fruit of a vigorous tree which produces abundantly. The peaches are large, the skin is highly colored, while the flesh is white streaked with red. It is sweet and very fragrant and the stone is easily separated. This peach matures by the end of August."

41398. "No. 3. *De Malta.* This peach grows abundantly on a strong tree, is of medium size with white flesh, and matures by the middle of August."

41399. "No. 4. *Canciller.* This peach is large and of fine appearance. Its flesh is firm, and it ripens by the end of August."

41400. "No. 5. *Valenciano.* This variety is a medium-sized fruit, with reddish tinged flesh, which grows on a strong tree that produces abundantly."

41401. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. **Yangtaw.**

Seeds from Yencheng, Kiangsu, China. Presented by Rev. Hugh W. White, American Presbyterian Mission, South. Received October 14, 1915.

See S. P. I. Nos. 21781, 30196, and 33431 for previous introductions and descriptions.

41402. TRITICUM DURUM Desf. Poaceæ. **Durum wheat.**

Seed from Buenos Aires, Argentina. Presented by the Ministerio de Agricultura. Received October 2, 1915.

"Commonly known as *Candeal*, a name which commercially covers all durum wheats grown in this country. Although we have no division of winter and spring wheats, we would classify this particular variety under the second heading." (*Sr. Guillermo Ancizar.*)

41403 to 41417.

Seeds from Bhutan, India. Collected by Mr. R. E. Cooper and presented by Bees (Ltd.), Liverpool, England, at the request of Mr. A. K. Bulley. Received October 14, 1915. Quoted notes by Mr. Cooper.

41403. SWERTIA sp. Gentianaceæ.

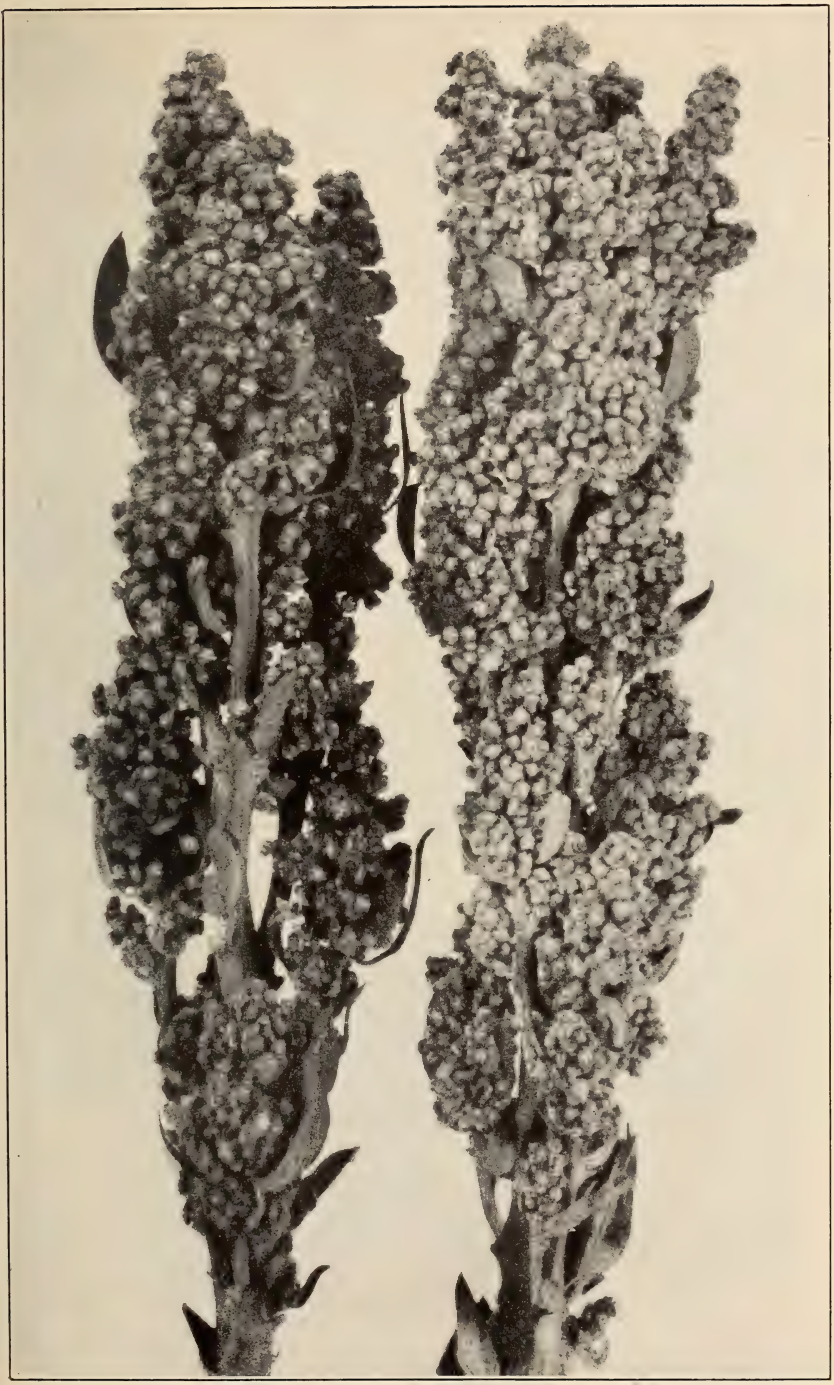
"No. 4157. Only seen in fruit, scarce, growing in moist sand and gravel at an altitude of 12,000 feet on a bare hillside."

41404. PRIMULA sp. Primulaceæ. **Primrose.**

"No. 4164. Preferring moist sand on exposed hillside or peat marsh under Abies forest at altitudes of 10,000 to 12,000 feet. Leaves glabrous, reticulate. Inflorescence of superposed umbels, most variable, from a head of three flowers to three umbels. Mixed seed from all sorts of plants. Flowers not seen, but suspected to be small, yellowish."

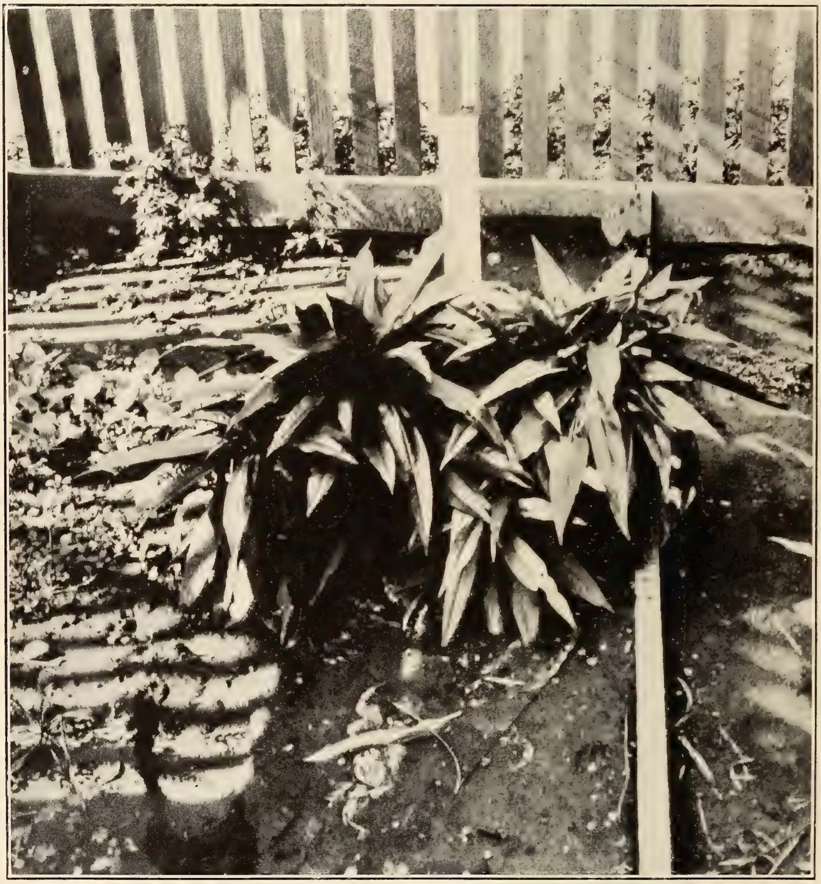
41405. HYDRANGEA sp. (?) Hydrangeaceæ.

"No. 4165. Bush under Acer forest at an altitude of 10,000 feet. Four feet high with showy bright-blue bracts on large heads."



THE QUINOA, AN IMPORTANT "GRAIN" PLANT OF THE ANDES (CHENOPODIUM QUINOA WILLD.), S. P. I. No. 41340.

This is one of the most useful plants in the mountain regions of Peru and Bolivia, the extremely small seeds of the white variety being cooked with potatoes to make a staple dish among the lower classes. Dark-colored seeds are used almost entirely for making chicha, or native beer. Before using, it is necessary to wash the seeds thoroughly in order to eradicate a bitter flavor which they possess. The value of this plant in the United States lies in its possibilities as a breakfast food. (Photographed, natural size, by the Yale University-National Geographic Society Expedition; P17780CA.)



A CHINESE DWARF PEACH FOR PLANT BREEDERS (AMYGDALUS PERSICA), S. P. I. No. 41395.

Although dwarf peaches such as the Dwarf Orleans have long been known and little use made of them, a new dwarf from China, the home of the peach, may not be without interest, particularly to breeders. This variety, sent in by Rev. George Campbell, of Kiayingchow, near Swatow, produced seven fruits when only 15 inches high. They were white clingstones of a good quality and quite ornamental, and were borne close to the trunk, which was about the size of a lead pencil. It is said to come true to seed. (Photographed by Mr. Peter Bisset in 1916 from seed planted at Chico, Cal., in October, 1915; P20612FS.)

41403 to 41417—Continued. (Quoted notes by Mr. R. E. Cooper.)

41406. PRIMULA sp. Primulaceæ. **Primrose.**

"No. 4166. Only seen in fruit, but allied to if not *Primula obtusifolia;* preferring peaty soil under shade of Abies forest, along stream edges at altitudes of 12,000 to 13,000 feet."

41407. IRIS sp. Iridaceæ. **Iris.**

"No. 4190. Growing under oak forest at an altitude of 8,000 feet, only seen in fruit and suspected of being only half hardy, but growing in dry situations on slopes that are snowed under in winter. May prove all right."

41408. PRIMULA PETIOLARIS Wallich. Primulaceæ. **Primrose.**

"No. 4213. Growing under rhododendrons at altitudes of 10,000 to 11,000 feet, in moss, on rocks, trees, etc. Not seen in flower. Inflorescence stalked."

41409. PRIMULA PETIOLARIS Wallich. Primulaceæ. **Primrose.**

"No. 4214. Growing in similar situations as S. P. I. No. 41408 and differing only in the sessile inflorescence *a la Primula winteri.* Flowers not seen."

41410. PRIMULA sp. Primulaceæ. **Primrose.**

"No. 4217. Suspected of being *Primula whitei* W. W. Smith, growing under rhododendron scrub at an altitude of 10,000 feet in moss on bowlders by stream. Never in actual swampy peat by water. Flowers dark blue, yellow eye, in a head often of 12 to 20 flowers."

41411. PRIMULA MOLLIS Nutt. Primulaceæ. **Primrose.**

"No. 4227. Growing in sodden leaf soil in undergrowth of Elatostema on slope facing north at an altitude of 7,000 feet. Not hardy. Flowers not seen."

41412. PRIMULA OBTUSIFOLIA Royle. (?) Primulaceæ. **Primrose.**

"No. 4270. Var. *lutea.* Flowers yellow with golden eye, harsh scented, growing in profusion in peaty alpine meadows at an altitude of 14,000 feet."

41413. TAMARIX sp. Tamaricaceæ. **Tamarisk.**

"No. 4283. Scrubby plant with spike of heather-colored flowers, growing on gravel by a stream in the bed of a glacial valley at an altitude of 12,000 feet. Plants 6 inches to 1 foot high, in masses; fruits woolly."

41414. MECONOPSIS sp. Papaveraceæ.

"No. 4293. Allied to *Meconopsis simplicifolia;* only seen in fruit among dwarf rhododendrons at an altitude of 13,000 feet. Fruit peculiarly round, differing in this from usual long fruits of *Meconopsis simplicifolia.*"

41415. PINGUICULA sp. Pinguiculaceæ. **Butterwort.**

"No. 4311. Only seen in fruit, growing in moist peat by a stream in an alpine meadow at an altitude of 12,000 feet."

41416. PRIMULA sp. Primulaceæ. **Primrose.**

"No. 4330. Same as S. P. I. No. 41404, but seed selected from plants with only two or three tiers of fruits."

41417. BRYOCARPUM HIMALAICUM Hook. f. and Thoms. Primulaceæ.

"No. 4332. Flowers yellow, solitary, growing in moss, etc., under Abies forest at an altitude of 11,000 feet."

41418. Ocotea sp. Lauraceæ.

Seeds from San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received October 9, 1915.

41419. Amygdalus persica L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Naples, Italy. Presented by Mr. Jay White, American consul. Received October 19, 1915.

"Seeds of a variety of clingstone peach known as the *Pesca-Cotogna*, and locally as the *Percoca*. The peach of this variety is a large, hard, yellow fruit, all of which characteristics are suggested by its name, which is literally the 'peach-quince.'" (*White.*)

41420. Protea argentea L. Proteaceæ. Silver tree.
(*Leucadendron argenteum* R. Br.)

Seeds from Lawang, Java. Presented by Mr. M. Buysman, Botanic Garden. Received October 18, 1915.

"The *Silver* tree of South Africa, the leaves of which plant are used for various purposes and contain protexein, used in cases of malaria." (*Buysman.*)

"*Witteboom*, a beautiful tree, native only in the immediate neighborhood of Cape Town. It is a small tree, up to 50 feet in height and 12 to 18 inches in diameter, with verticillate branches and white silky foliage which render its name appropriate and make the tree visible from a distance. Leaves widely lanceolate, 3 to 7 inches long, softly coriaceous, entire, acute. The soft, silky white leaves are now an article of commerce, being salable as curios, bookmarks, mats, fancy articles, etc., especially as when dried they take writing, painting, etc., and are then sold with texts or names inscribed or small scenes depicted. An export trade in these exists, as also in leaves for everlasting bouquets. The tree seldom attains maturity, on account of the constantly recurring fires, but where seeding is allowed these fires appear to assist germination and are followed by dense regrowth which would not otherwise appear. The limited distribution of this tree and its great abundance over that area where it has practical possession are very remarkable. In cultivation elsewhere there is little difficulty in securing germination, and if it does not damp off during the early stages it may continue to grow up to cone-bearing stage in 10 to 15 years, but seldom attains the size or vigor it has on Table Mountain, and nowhere has it shown any tendency to become naturalized." (*Sim, The Forests and Forest Flora of Cape Colony, p. 294.*)

41421 to 41423. Amygdalus persica L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

Seeds from Shanghai, China. Presented by Mr. C. E. Gauss, American consul. Received October 16, 1915. Quoted notes by Mr. Gauss.

"Peaches are grown in the Ziccawei district of Shanghai and are of two general types, viz, the round peach and the flat peach. It is said that the peaches sold in Shanghai must necessarily come from within a radius of about 20 miles, due to the fact that there are no cold-storage facilities in China. Nevertheless peaches grown in Chefoo, Hangchow, and Ningpo are to be found on the Shanghai market. These, however, are said to be picked while green and allowed to ripen during the period of transportation."

41421 to 41423—Continued. (Quoted notes by Mr. C. E. Gauss.)

41421. "*Mi t'ao,* meaning 'sweet peach,' is round in shape, as is also the seed. Its appearance is not very nice, as it has many blemishes, but it tastes very sweet and is more expensive than *Pien t'ao* [S. P. I. No. 41422]."

41422. "*Pien t'ao,* meaning 'flat peach.' This peach is larger in size and looks much better than the *Mi t'ao* [S. P. I. No. 41421], but does not taste as sweet." A sample of the seed shows that it is the ordinary peach and not the flat variety.

41423. (No notes.)

41424 and 41425.

Seeds from Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received October 18, 1915.

41424. CUCURBITA PEPO L. Cucurbitaceæ. **Japanese squash.**

Chirimen. A round, orange-red, deeply scalloped squash of good flavor.

41425. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. Amygdalaceæ. **Sargent's cherry.**
(*Prunus sargentii* Rehder.)

Yama zakura, from Hokkaido.

41426. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

Fruits from San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, through Mr. J. E. Van der Laat, director, Department of Agriculture. Received October 21, 1915.

"*Fiberless cocoros.* Very small, entirely coreless, and fiberless. I do not know whether the seeds of all the fruits are without testa, but the only one that I could examine was so; simply the cotyledons in a very small cavity in the center, without a shell." (*Wercklé.*)

41427. CORYLUS COLURNA L. Betulaceæ. **Turkish hazel.**

Seeds from Rochester, N. Y. Presented by Mr. Richard E. Horsey, Highland Park, at the request of Mr. C. A. Reed, of the Bureau of Plant Industry. Received October 19, 1915.

"*Constantinople* hazel. This hazel is the one which grows to be a large tree. One of the specimens in the park at Rochester measured 58 inches in circumference 1 foot above the ground." (*C. A. Reed.*)

"A tree up to 80 feet high, with a trunk sometimes 7 feet in girth, covered with pale scaling bark; leaves 2½ to 6 inches long, 2 to 4½ inches wide; broadly heart shaped, coarsely double toothed or almost lobed; fruits in clusters of three or more, the husks 1½ inches wide, with narrow-pointed fringed lobes 1 inch long; nuts one-half to five-eighths of an inch in diameter. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 401.*)

See S. P. I. No. 2212 for previous introduction.

41428. OPUNTIA NIGRICANS Haworth. Cactaceæ. **Prickly-pear.**

From Sydney, New South Wales. Cuttings presented by Mr. J. H. Maiden, director, Botanical Gardens. Received October 22, 1915. No. 144.

41429. MERATIA PRAECOX (L.) Rehder and Wilson. Calycanthaceæ.
(*Chimonanthus fragrans* Lindl.)

Seeds from China. Presented by Mr. N. Gist Gee, Soochow University, through Mr. R. Rathbun, United States National Museum. Received October 19, 1915.

"Chinese *La mei hua*, rather rare. Make good flowering plants." (*Gist Gee.*)

"A deciduous shrub, naturally about 8 feet high, and of compact, bushy habit, but growing considerably higher on walls. Leaves lanceolate, 2 to 5 inches long, dark lustrous green. Flowers exceedingly fragrant, produced at various times between November and March according to the weather, but in ordinary seasons at their best in December against a wall; they are solitary on very short stalks at the joints of the previous summer's shoots, three-fourths to 1 inch across, the sepals and outer petals of an almost transparent yellowish green, the inner petals smaller and purplish. Seeds produced in a stalked gourd-shaped structure 1½ inches long, to the apex of which the stamens remain attached." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 337.*)

41430. ALEURITES FORDII Hemsl. Euphorbiaceæ. **Tung tree.**

From Pineville, La. Seeds presented by Mr. William Hammond, superintendent, Alexandria National Cemetery. Received October 19, 1915.

"This seed came from the largest tree on the grounds, situated immediately in front of the lodge (west gate), and as there is and has been a flower bed around its base that has been irrigated regularly I attribute its larger size to that, although the water would not penetrate deeply." (*Hammond.*)

41431. BACCAUREA SAPIDA (Roxb.) Muell. Arg. Euphorbiaceæ.

Seeds from Rangoon, Burma, India. Presented by Rev. William H. S. Hascall.

"*Kan-a-so-thi* or *Pierardia*." An evergreen tree, native of the Malay Archipelago, 40 to 50 feet high, with alternate, rather membranous leaves 4 to 8 inches long; inconspicuous diœcious flowers in racemes, and yellow, slightly hairy fruits from three-fourths to 1 inch long. The bark is one of the chief mordants employed in using cotton dyes in India. (Adapted from *Hooker, Flora of British India*, and *Watt, Commercial Products of India.*)

41432 to 41443.

Seeds from Kamerunga, via Cairns, Australia. Presented by Mr. J. A. Hamilton. Received October 18, 1915. Quoted notes by Mr. Hamilton, except as otherwise indicated.

41432. ALBIZZIA ODORATISSIMA (L. f.) Bentham. Mimosaceæ.

See S. P. I. Nos. 38996 and 39103 for previous introductions and description.

41433. ANNONA MURICATA L. Annonaceæ. **Soursop.**

See S. P. I. Nos. 32302 and 35285 for previous introductions and descriptions.

41434. CANAVALI OBTUSIFOLIUM (Lam.) DC. Fabaceæ.

"Native bean. It is not edible so far as I know. The flowers are sweetly scented and come out singly. It might cross with the *Mauritius* bean and make a good cover crop, for it seems to stand drought and heat well."

41432 to 41443—Contd. (Quoted notes by Mr. J. A. Hamilton.)

"The seeds are eaten by the blacks after cooking, as they are poisonous in the raw state. Some shipwrecked sailors in northwestern Australia were poisoned by them." (*Forrest. In Maiden, Useful Native Plants of Australia.*)

41435. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"*New Era* papaya."

41436. CITRUS sp. Rutaceæ. **Orange.**

"*Kamerunga seedling* orange; A 1, very sweet; in fact, has a minimum of acid."

41437. DIOSCOREA sp. Dioscoreaceæ. **Yam.**

"Seeds of native yam; they are wild *kaikai* (native food), and no attempt has ever been made to cultivate them."

41438. FICUS BENJAMINA L. Moraceæ. **Weeping fig.**

See S. P. I. No. 18734 for previous introduction and description.

41439. LYCOPODIUM sp. Lycopodiaceæ. **Club moss.**

Spores.

41440. MUSA HILLII F. Mueller. Musaceæ. **Wild banana.**

"The fruit is not edible, being full of seeds, but as the flowers evidently produce pollen, they might be useful to carry out experiments in hybridization. The plants are prolific enough, there being about 200 fruits on the bunch this seed came from."

41441. PLATYCERIUM GRANDE J. Smith. Polypodiaceæ. **Fern.**

"The glory of the genus, however, is *Platycerium grande*. The barren fronds are exceptionally large, rounded and wavy margined at the base, deeply cut above, forming an erect or arching background to the pendent fertile fronds, which fork more times and have much narrower segments than the barren fronds. Unfortunately this is the only species that does not produce suckers at the roots, by which all the others are easily propagated. It alone must be raised from spores, a long and anxious process." (*L. H. Bailey, Cyclopedia of American Horticulture, vol. 3, p. 1369.*)

Spores.

41442. RUBUS sp. Rosaceæ. **Wild raspberry.**

"Wild raspberry. Likes moist situations. Growing near a spring in decomposed, yellowish red, sandy shale, latitude 17° 30′ S., 100 feet above sea level."

41443. ZIZIPHUS MAURITIANA Lam. Rhamnaceæ. **Indian jujube.**
(*Ziziphus jujuba* Lam., not Miller.)

"*Tag bush*, or *Chinese-apple*. Rather ornamental if trained as a standard. Very good for a hedge."

"The Indian jujube. Lisboa observes that it is one of the commonest fruit trees of the villages of western India. A moderate-sized deciduous tree, 'distinctly wild in the forests of the Siwaliks and sub-Himalayan tracts of the Punjab and United Provinces, and also in the Deccan and in Upper Burma and Ceylon in dry forests. Elsewhere mostly cultivated or run wild.'" (*Gamble, A Manual of Indian Timbers.*)

"The bark is said to be used for tanning in northern India, Bombay, Madras, and Burma. In Chota Nagpur it is similarly employed, but

41432 to 41443—Continued.

along with the fruit. Occasionally it is thrown into indigo vats to aid in precipitating the fecula. Hooper states that a sample of bark from Madras gave 4.1 per cent of tannin, and a sample of thick root examined at Dehra Dun gave 2.6 per cent, while some thin roots afforded 9.3 per cent. Most parts of the tree are employed in native medicine. The fruit of the wild *ber*, which ripens in the cold weather—the cultivated one almost in any season—resembles the crab apple in flavour and appearance and is much eaten, as well as that of most species, by the poorer classes; in fact, in times of scarcity these fruits are especially prized. By cultivation it is greatly improved both in size and flavour, and there is great variety among the cultivated forms. According to Marshall Woodrow, 'the best are elliptical, 2 inches in length by 1 in thickness, and are propagated by inarching or budding on seedlings of the common sort.' The unripe fruit is pickled; the ripe pulp is dried, mixed with salt and tamarinds, to form a condiment, or is made into chutnies. The kernels are also eaten, and the leaves constitute a useful fodder for cattle and goats. The wood is hard and reddish in colour, weighing on an average 48 pounds per cubic foot. It is largely employed in ordinary constructive work and has been recommended for furniture. It is also said to make excellent charcoal." (*Watt, Commercial Products of India, p. 1143.*)

41444 and 41445.

Seeds from Sibpur, near Calcutta, India. Presented by the curator, Royal Botanic Gardens. Received by Mr. W. T. Swingle, October 15, 1915.

41444. ATALANTIA CEYLANICA (Arn.) Oliver. Rutaceæ.

A much-branched spiny shrub or small tree native to Ceylon and India, where it is known as *yakinaran* or *peykurundu*. Chiefly of interest for trial as a stock, since its large seeds would be likely to produce vigorous seedlings. The dry fruit makes it unpromising for breeding purposes. (Adapted from *Swingle.* In *Bailey, Standard Cyclopedia of Horticulture.*)

41445. PLEIOSPERMIUM ALATUM (Wight and Arnott) Swingle. Rutaceæ. (*Limonia alata* Wight and Arnott.)

A small tree, common in southern India and Ceylon, especially in the dry regions; known as *tumpat-kurundu*. The wood is hard and close grained, much like that of *Chalcas exotica*. Of possible value for stocks. (Adapted from *Swingle.* In *Bailey, Standard Cyclopedia of Horticulture.*)

41446. BERBERIS ANGULOSA Wallich. Berberidaceæ. **Barberry.**

Seeds from Kew, England. Presented by the director, Royal Botanic Gardens. Received October 22, 1915.

A deciduous Himalayan barberry with clustered dark-green leaves, unusually large flowers, and large palatable berries.

See S. P. I. Nos. 33016 and 40143 for previous introductions.

41447 and 41448.

Seeds from Kamerunga, via Cairns, Queensland. Presented by Mr. J. A. Hamilton. Received October 18, 1915. Quoted notes by Mr. Hamilton.

41447 and 41448—Continued.

41447. CAESALPINIA CORIARIA (Jacquin) Willd. Cæsalpiniaceæ. **Divi-divi.**

"*Divi-divi.* Ornamental; the pods used for tanning."

See S. P. I. Nos. 26171 and 35896 for previous introductions.

41448. GOSSYPIUM sp. Malvaceæ. **Caravonica cotton.**

"*Caravonica* cotton, originated by Dr. Tomates."

41449. PHYSALIS PERUVIANA L. Solanaceæ. **Husk-tomato.**

Seeds from Dundas, New South Wales, Australia. Presented by Mr. Herbert J. Rumsey. Received October 21, 1915.

"*Cape-gooseberry* or *Husk-tomato.* The last season's crop cast back to purple tinge rather badly, though the fruit was very fine. We are selecting with the object of procuring a set type of yellow fruit, but the purple strain is, we find, hard to eradicate, and though the purple fruit is very fine for show purposes it has not the commercial value of the yellow fruit." (*Rumsey.*)

41450. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Pummelo.**

From Amoy, China. Presented by Mrs. Helen C. Kip. Received October 23, 1915.

"Pomelo seed from Siam or the Straits." (*Kip.*)

41451. ARTOCARPUS COMMUNIS Forster. Moraceæ. **Breadfruit.**
(*Artocarpus incisa* L. f.)

Seeds from Orotina, Costa Rica. Presented by Mr. Carlos Wercklé. Received October 23, 1915.

"These are as good as chestnuts; 100 seeds to a fruit." (*Wercklé.*)

41452. MEROPE ANGULATA (Willd.) Swingle. Rutaceæ.
(*Citrus angulata* Willd.)

Seeds from Calcutta, India. Presented by Mr. C. C. Calder, Royal Botanic Gardens. Received October 23, 1915.

See S. P. I. Nos. 28933, 31353, and 39168 for previous introductions.

41453 and 41454.

Seeds from Saskatoon, Canada. Presented by Prof. T. N. Willing, University of Saskatchewan. Received October 25, 1915. Quoted notes by Mr. Fairchild.

41453. PSORALEA ESCULENTA Pursh. Fabaceæ.

"An edible-rooted species of legume, which grows abundantly in Saskatchewan, according to Prof. Willing. The root has been eaten by the Indians for many years and is called the *Cree-turnip.* So far as Prof. Willing knew, its cultivation had never been attempted. It should be grown and a sufficient quantity of seed obtained to experiment with."

41454. SOLANUM TRIFLORUM Nutt. Solanaceæ.

"A low-growing species of Solanum to which my attention was directed by Prof. Willing. Apparently this is a very heavy-fruiting species of Solanum, and it is possible that hybrids might be produced between it and one of the species of Physalis. It might prove interesting to anyone working with these plants, although it has a rank flavor, resembling that of *Solanum nigrum.*"

41455. Prunus sp. Amygdalaceæ. Plum.

Plants from China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., May 27, 1914.

"(No. 1193. Plants from Tsaochowfu, Shantung, China, March 11, 1914.) A flowering plum, much liked by the Chinese for forcing purposes. Generally trained in grotesque shapes and always grafted on *Amygdalus davidiana*, as the latter stands drought, transplanting, and neglect better than plums on their own roots. Chinese name *Mei*." (*Meyer.*)

41456. Diospyros kaki L. f. Diospyraceæ. Persimmon.

Scions from Glendora, Cal. Presented by Judge Charles Silent, through Mr. Wilson Popenoe, of the Bureau of Plant Industry. Received October 28, 1915.

"In the fall of 1914, when in California, I visited Judge Silent's place and became interested in this persimmon tree. The young twigs of all the branches were bearing the old pedicels of staminate flowers in great numbers, but after a careful search of the tree I could discover the remains of only three pedicels of pistillate flowers. If this character should hold good (and we have reason to believe it will), we have at last found the long-looked-for male *Kaki* persimmon tree, which should be planted in every orchard of Kaki persimmons as a pollinator, for Prof. H. H. Hume has demonstrated that the lack of pollination is the cause of the immature fruits dropping." (*Peter Bisset.*)

41457. Cucumis melo L. Cucurbitaceæ. Muskmelon.

From Petrograd, Russia. Seeds presented by Capt. N. A. McCully, naval attaché, American embassy, at the request of Mr. W. P. Cresson. Received October 28, 1915.

"Seeds of a Tashkend *Denia*, a sort of large cantaloupe. At dinner we had one of these melons and it was remarkably good, with a peculiar, delicious flavor different from that of our own cantaloupe or from that of any other that I know. The melons are brought here from the vicinity of Tashkend." (*McCully.*)

41458. Barleria cristata L. Acanthaceæ.

Cuttings from Manila, Philippine Islands. Presented by the director, Department of Agriculture. Received November 1, 1915.

"A Philippine hedge plant, the best in the Tropics. I think it never seeds here." (*O. W. Barrett.*)

An erect or diffuse acanthaceous undershrub with the branches and upper surface of the leaves usually downy, with yellow hairs, and with dense, often compound, ovate spikes of purple, blue, or white flowers. The corolla is about 1½ inches long, the upper half funnel shaped and spreading into ovate lobes one-half inch in length. Wild everywhere in the lower hills of northeastern and central India and probably in the mountains of southern India also. (Adapted from *Hooker, Flora of British India, vol. 4, p. 488, 1884.*)

41459. Morus nigra L. Moraceæ. Mulberry.

Cuttings from Biggs, Cal. Procured from Mr. F. Haselbusch by Mr. R. L. Beagles to be grown at the Plant Introduction Field Station, Chico, Cal.

"A very large, black, subacid mulberry. Said to be of Russian origin." (*J. E. Morrow.*)

41460. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ. **Japanese apricot.**

Bud sticks from Yuba City, Cal. Obtained from Dr. J. H. Barr by Mr. R. L. Beagles to be grown at the Plant Introduction Field Station, Chico, Cal.

"A very large, spreading tree, bearing dense masses of white flowers. Growth very vigorous. Very beautiful in spring. Fruit edible, but small." (*J. E. Morrow.*)

41461. PYRUS OVOIDEA Rehder. Malaceæ. **Pear.**

Seeds taken from fruit received from the Arnold Arboretum, Jamaica Plain, Mass. Growing at the Plant Introduction Field Station, Chico, Cal.

For propagating and testing.

41462. CASTANEA PUMILA × CRENATA. Fagaceæ. **Hybrid chestnut.**

Seedlings from hybrid trees. The parent trees were the result of a cross between the Japanese chestnut and the American chinkapin made by Dr. Walter Van Fleet. Growing at the Plant Introduction Field Station, Chico, Cal.

41463. JUNIPERUS CEDRUS Webb. Pinaceæ. **Teneriffe juniper.**

Seeds from Teneriffe, Canary Islands. Collected by Dr. George V. Perez and presented through the Royal Botanic Gardens, Kew, England. Received November 1, 1915.

"This valuable tree, which is nearly extinct, is said to be the quickest growing of all junipers. I have carefully watched the growth of some in my garden at Villa Orotava, and can report an average of over 3 feet a year. *Juniperus cedrus* begins to seed here within five years of planting, so that its propagation is easy, at any rate in a suitable climate. If treated in the following manner, it germinates much more promptly and abundantly. The seeds should be carefully extracted from the galbulus, plunged in boiling water for 10 seconds, then inclosed in a canvas or calico bag and immersed in cold water, and then sown, preferably in heather earth. It is important that plants of our flora should be tried almost exclusively in California and perhaps in Florida; for although *Juniperus cedrus* stands frost in its natural habitat at great altitudes, there is no doubt that our plants ought to be experimented with in climates like ours, where in the coast region we never have frost and the rains occur only in the winter months. I do not think you can lay too much stress on the fact that the seeds I have sent you should be tried only in southern California." (*Perez.*)

41464. ANNONA SQUAMOSA L. Annonaceæ. **Sugar-apple.**

Seeds from Saigon, Cochin China. Presented by Mr. P. Morange, Director of Agriculture. Received November 2, 1915.

"These seeds are known in Cochin China under the name of *Pomme-cannelle du Cap* (Cape cinnamon-apple.) The flesh of fruits of this variety when ripe presents a firm texture, with seeds comparatively rare, and does not split open, as is the case with the ordinary variety. This peculiarity allows the transportation of the fruit for long distances and should certainly make its exportation easy." (*Morange.*)

41465. Prunus japonica Thunb. Amygdalaceæ.

From Changchun, Manchuria. Seeds presented by Dr. R. J. Gordon, Medical Mission Hospital. Received November 2, 1915.

"*Oulir* [*yü li*] stones." A bushy plant rarely over 5 feet high, with broadly ovate, acuminate, coarsely double-serrate leaves, rose-colored or blush flowers, in twos or threes, appearing with the leaves, and globular or short-oblong fruits, one-half inch in diameter, smooth and shining, wine red. (Adapted from *Bailey, Standard Cyclopedia of Horticulture.*)

41466 and 41467.

Seeds from Bangalore, India. Presented by Hodson & Co. Received November 3, 1915.

41466. Atalantia ceylanica (Arn.) Oliver. Rutaceæ.

See S. P. I. No. 41444 for previous description.

41467. Pleiospermium alatum (Wight and Arnott) Swingle. Rutaceæ.
(*Limonia* alata Wight and Arnott.)

See S. P. I. No. 41445 for previous description.

41468 and 41469. Belou marmelos (L.) Lyons. Rutaceæ. **Bael.**
(*Aegle marmelos* Correa.)

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Agricultural Experiment Station. Received November 3, 1915.

Seeds from what is said to be the only tree of this species in the islands.

41470. Quisqualis indica L. Combretaceæ.

Seeds from Kiayingchow, Swatow, China. Presented by Rev. George Campbell, through Mr. George Hanson, American consul, Swatow, China. Received November 23, 1915.

"*Kyun-tz* [chün tzŭ]. A vigorous climber with showy flowers, white at first but changing to pink. The seeds are used by the Chinese as a vermifuge and are sold at native drug shops." (*Campbell.*)

41471. Citrullus vulgaris Schrad. Cucurbitaceæ. **Watermelon.**

Seed borne by a tree of S. P. I. 21249, sent to Mrs. Bow on February 20, 1911. American consul general. Received November 6, 1915.

"Seeds of a watermelon of the type which is most frequently found in the Constantinople market, the small spherical melon. These seeds were taken from a particularly fine fully ripe specimen, about 8 inches in diameter, with a good, sweet flavor, a very thin rind, and slightly fibrous flesh. These melons usually are on the market from early in July till the end of October. They vary in diameter from 4 to 15 inches." (*Ravndal.*)

41472. Macadamia ternifolia F. Mueller. Proteaceæ. **Queensland nut.**

From Homestead, Fla. Presented by Mrs. L. L. Bow. Received November 6, 1915.

Seed borne by a tree of S. P. I. 21249, sent to Mrs. Bow on February 20, 1911.

"You may be interested to know that these nuts make a delicious cake, and I have also used them in sandwiches and salads. My tree is near the laundry and gets a great deal of wash water, but it has had very little fertilizer besides the soapsuds." (*Bow.*)

41473. MEIBOMIA PURPUREA (Mill.) Vail. Fabaceæ.
(*Desmodium incanum DC.*)

From Joinville, Brazil. Presented by Mr. Jean Knatz. Received November 8, 1915.

"I received this seed from a place on the near plateau, at an altitude of 2,500 feet, where the temperature goes down a few degrees below freezing point every winter." (*Knatz.*)

41474. DOCYNIA DELAVAYI (Franch.) Schneider. Malaceæ.
Wild pear.

From Yunnanfu, China. Presented by Father Ducloux, Yunnanfu Catholic Mission, through the acting Commissioner of Customs, Mengtsz, China. Received November 6, 1915.

"The tree is not often found in the regions around Yunnanfu." (*Ducloux.*)

These cuttings were sent in response to our request for a Pyrus, which Dr. Augustine Henry described in a letter some years ago, with fruits as large as an apple and edible. There are four ovules in each locule, yet it is rather an apple than a quince. It is not a good fruit as it stands, but it has not been cultivated by the Chinese, and its possibilities are unknown. It is called *to-i.*

41475. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino.
(*Prunus sargentii* Rehder.) Amygdalaceæ. **Sargent's cherry.**

From New Haven, Conn. Purchased from the Elm City Nursery Co. Received November 6, 1915.

One-year-old seedlings raised from seed obtained from the Arnold Arboretum. To be used in the cherry-stock investigations by Department officials.

41476. PAEONIA MLOKOSEWITSCHI Lomakin. Ranunculaceæ. **Peony.**

Seeds from Tiflis, Caucasus, Russia. Presented by Mr. A. Rolloff, director, Botanic Garden. Received November 10, 1915.

"This, the most handsome of the yellow-flowered paeonies, thrives under the treatment suitable for the other forms belonging to the herbaceous section of the genus, and appears as hardy and as satisfactory under cultivation as they have proved. The glaucous leaves with their red veins and margins contrast sufficiently with the more purely green leaves of *P. wittmanniana* to attract attention, and it is certain to become a favourite with gardeners. The fine sulphur-yellow flowers are more striking than the whitish yellow blooms of *P. wittmanniana. Paeonia mlokosewitschii* was discovered by Mlokosewitsch near Lagodekhi in the eastern part of the central Caucasus." (*Curtis's Botanical Magazine, pl. 8173, 1908.*)

41477. CORDEAUXIA EDULIS Hemsl. Cæsalpiniaceæ. **Yeheb nut.**

Seeds from Aden, Arabia. Presented by Mr. A. G. Watson, American vice consul, who obtained them from the governor of Italian Somaliland at Magadoxo. Received November 13, 1915.

An arid-land legume used as famine food by the Somalis.

See S. P. I. No. 29122 for previous introduction.

41478 to 41480.

Plants from Indian Head, Saskatchewan, Canada. Presented by Mr. Norman M. Ross, Forest Branch, Department of the Interior. Received November 15, 1915.

41478. Betula pendula Roth. Betulaceæ. **Birch.**

"Plants grown from seed picked from our plantation, the original seed of which was obtained from Russia. Two-year-old seedlings were planted 4 feet apart each way in 1908 and show a height of 12 to 16 feet and have borne seed for the past two or three years." (*Ross.*)

See S. P. I. Nos. 39489 and 39990 for previous introductions and description.

41479. Caragana pygmaea (L.) DC. Fabaceæ.

See S. P. I. No. 33756 for previous introduction.

For an illustration of this hedge plant, see Plate VII.

41480. Caragana arborescens Lam. Fabaceæ. **Siberian pea tree.**

"Cuttings of the prostrate form; grown from seed picked in our ordinary hedges. We find that probably 1 per cent of the seedlings show these characteristics. This plant 5 years old shows a spread of 4 feet. We think this form can be used effectively for landscape planting." (*Ross.*)

41481. Dumoria heckeli A. Chevalier. Sapotaceæ. **Bako.**

Seeds from Coomassie, Gold Coast Colony. Presented by Mr. A. E. Evans, traveling inspector, Agricultural Department. Received November 13, 1915.

"A gigantic sapotaceous tree attaining a height of 110 to 160 feet, with a cylindrical trunk 3¼ to 6½ feet in diameter near the base [circumference approximately 10 to 20 feet], and rising 90 feet or more before bearing branches. Leaves obong-lanceolate, papery, 2¾ to 4½ inches long and 1 to 1½ inches wide. Flowers solitary or in clusters of 2 to 3 in the axils of the leaves. Calyx campanulate, corolla rotate, greenish white, three-fourths inch in diameter, slightly fragrant. Fruit at maturity greenish yellow, sphero-ovoid, like a russet apple, with mellow, sickening pulp, bitter and nonedible. Geographic distribution, Ivory Coast, Gold Coast, Liberia, in the vast virgin forests. Flowers in May. The timber, reddish with beautiful markings, is one of the best African substitutes for mahogany." (Translation from the original description, *Comptes Rendus de l'Académie des Sciences, Paris, vol. 145, p. 226, 1907.*)

41482. Ricinus communis L. Euphorbiaceæ. **Castor bean.**

Seeds from Chungking, China. Presented by Mr. E. Widler. Received November 15, 1915.

"*Ping ma tzŭ.* A plant 6 to 9 feet in height, bearing white flowers; it takes about six months to grow. The seeds ripen throughout the season from early summer to frost. The seed is used principally for castor oil, which is prepared by pressing. The seeds are brown and black; they sell in the market for 1,000 cash for 2½ catties." (*Widler.*)

A HARDY LOW-GROWING HEDGE PLANT (CARAGANA PYGMAEA (L.) DC.), S. P. I. No. 41479.

There is a growing demand for hedge plants and windbreak plants on the Plains of the Dakotas. The tall-growing Caraganas play a great rôle as windbreaks on the Canadian prairies, and this handsome low-growing species of the same genus is worthy of a place in the dooryards and along the drives throughout the bleak northwestern country. It will take rank with the barberry, for, although it does not have red berries in winter, it is covered in summer with attractive flowers. (Photograph from Mr. N. M. Ross, Forest Nursery Station, Indian Head, Saskatchewan.)

41483. Juniperus cedrus Webb. Pinaceæ. Teneriffe juniper.

Seeds from Teneriffe, Canary Islands. Presented by Dr. George V. Perez. Received November 17, 1915.

See S. P. I. No. 41463 for previous introduction and description.

41484. Jubaeopsis caffra Beccari. Phœnicaceæ. Pondoland coco.

Seeds from Johannesburg, Union of South Africa. Purchased from Mr. J. Burtt Davy, botanist, Agricultural Supply Association. Received September 21 and October 7, 1915.

"I have just learned of the existence of a grove of wild coconut palms along the coast some 70 miles south of Port Shepstone. This appears to be a new species of coconut, adapted to warm temperate conditions; the nuts are said to be smaller than those of the typical *Cocos nucifera*. The fruits have the flavor of coconut and are much prized by the Tondos, who traveled scores of miles to collect and sell them. They are used as food, and, I am told, for oil." (*Davy.*)

"Until quite recently only two genera of palms were known from South Africa. A few years ago Mr. Charles Ross, then conservator of forests at Umtata, reported the occurrence of another kind in Pondoland. This has now been found to be the representative of a new genus named Jubaeopsis, from its nearest ally, Jubaea, a monotypic genus of South America (Chili). The fruit of Jubaeopsis differs from that of Cocos by the position of the germinating holes which in the latter genus are situated near the base of the nut, but in Jubaeopsis near its equator. The endosperm is hollow, as in the coconut, and also of a sweetish taste, but without milk. A tree up to 20 feet high, with leaves 12 to 15 feet long. The ♂ flowers are inserted on the upper parts of the branches of the spadix and possess 8 to 16 stamens, the ♀ flowers being on the lower parts. The fruits are about the size of walnuts, but nearly globular, the fibrous pericarp being yellow when ripe. The palm occurs, as far as known, only at two localities in Pondoland, viz., at the mouths of the Umsikaba and the Umtentu Rivers, in both cases only on the northern bank and in close proximity to the water. As this is, apart from the widely spread coconut palm, the only member of the tribe which occurs in Africa, all the others being American, its discovery throws some new light on the origin of the Cocoineæ and the relationship of our flora." (*Marloth, Flora of South Africa, vol. 4, p. 48.*)

41485 to 41488.

From Orotina, Costa Rica. Presented by Mr. Carlos Werckle. Received November 16, 1915. Quoted notes by Mr. Werckle.

41485. Licania platypus (Hemsl.) Fritsch. Rosaceæ. Sansapote.

"Seeds of the forest sansapote, which is the poorest and smallest fruit of all four or five species of Licania; still the little meat it has is quite good. A splendid, very large forest tree, the timber of which is considered nearly as valuable as Cedrela. I will try to graft the *Couepia* on it."

41486 and 41487. Solanum sp. Solanaceæ.

"Root cuttings of a very low-growing perennial herb, which makes a single, vertical root like a yuca (manioc), which enters into the soil to a great depth. I do not know whether it is edible or poisonous. The soft herbaceous plant spreads over the ground at a height of a few inches; the large, solitary, night-blooming flowers are a beautiful pure white and have a very fine fragrance, which, however, is only noticeable at a very short distance from the plant, though it is not mild."

41485 to 41488—Continued.

41488. ANNONA PURPUREA Moc. and Sesse. Annonaceæ. **Soncoya.**

"This fruit has only two defects—the seeds are too large and are 'cling.' It is recommended for crossing with *Annona squamosa* and *Annona cherimola*."

41489. HALESIA CAROLINA MONTICOLA Rehder. Styracaceæ. **Mountain silverbell.**

Seeds from Jamaica Plain, Mass. Presented by Prof. C. S. Sargent, Arnold Arboretum. Received November 13, 1915.

"The silver-bell tree of the Southern States, *Halesia tetraptera*, has long been cultivated in northern gardens. It is usually shrubby in habit with several stout, wide-spreading stems, and here at the North rarely grows more than 15 to 20 feet high. It is an inhabitant of the Southern States from West Virginia and southern Illinois to northern Florida and eastern Texas. It grows at low altitudes and does not appear to ascend to the slopes of the high Appalachian Mountains, although the Halesia of those mountain forests was long considered identical with the lowland tree. The Halesia of the high slopes, however, is a tree often 80 to 90 feet high, with a trunk 3 feet in diameter, sometimes free of branches for a distance of 60 feet from the ground. It is apparently only in recent years that this mountain tree has been introduced into cultivation by the Biltmore Nursery. From Biltmore it was sent to the parks of Rochester, N. Y., and from Rochester it came to the Arboretum with a description of its peculiar habit, large flowers, and fruit. The mountain tree, which has lately been distinguished here as var. *monticola*, grows as a tree from the time the seed germinates, and the seedlings show no variation of habit. Young trees are clean stemmed with short branches which form a narrow pyramidal head. The leaves are of rather different shape and less hairy than those of the lowland tree; the flowers are fully a third larger and the fruit is nearly twice as large. Trees less than 10 feet produce flowers and fruit in abundance. There is now every reason to believe that the mountain Halesia will prove one of the handsomest flowering trees of large size which it is possible to cultivate in this climate. Its tall trunk and narrow head suggest that it may prove a good street and roadside tree." (*Arnold Arboretum, Bulletin of Popular Information.*)

41490. COLOCASIA ESCULENTA (L.) Schott. Araceæ.

Tubers from Joinville, Brazil. Presented by Mr. Jean Knatz. Received October 25, 1915.

"*Cara* (*Kara*). *Cara* is much used to mix with flour after being baked, in order to make the bread used by the farmers, into which enter sweet potatoes, cassava, flour and 'taya,' especially now that wheat flour is so expensive. I think the larger sort of '*cara*' is the taro of the South Sea Islands." (*Knatz.*)

41491 and 41492.

Seeds from Chungking, China. Presented by Mr. E. Widler. Received November 18, 1915. Quoted notes by Mr. Widler.

41491. CUCURBITA PEPO L. Cucurbitaceæ. **Nan kua.**

"*Nan kua.* A creeping plant 10 to 15 feet long; grows best at a temperature of 70° to 110° F. It takes about three months to mature; bears yellow flowers and fruits in the autumn. The fruit is 5 feet in circumference and weighs about 40 catties. It is used only as a vegetable

41491 and 41492—Continued.

and is prepared by sweetening and boiling. It sells in the market for about 20 cash per catty."

41492. BENINCASA HISPIDA (Thunb.) Cogn. Cucurbitaceæ. **Wax gourd.**

"*Tung kua.* A plant 20 to 30 feet long. Grows best at a temperature of 70° to 110° F.; takes about six months to mature; bears yellow flowers and fruits in the autumn. The fruit is 3 feet long and 2 feet in circumference; is used only as a vegetable, boiled and sweetened, and sells in the market at 25 cash per catty."

41493. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

Seeds from Brisbane, Australia. Presented by Mr. Leslie Gordon Corrie. Received November 22, 1915.

41494. RHAPHITHAMNUS CYANOCARPUS (Bert.) Miers. Verbenaceæ. **Espina blanca.**

Seeds from Bariloche, Argentina. Presented by Dr. Joseph Vereertbrugghen. Received November 22, 1915.

"This plant, *espina blanca* (white thorn), which I found in the Canyon Bariloche, is an evergreen belonging, I believe, to the Chilean vegetation. Animals eat it the year round and like it very much, horses as well as cattle." (*Vereertbrugghen.*)

41495. RANDIA sp. Rubiaceæ.

Seeds from Orotina, Costa Rica. Presented by Mr. Carlos Wercklé. Received November 24, 1915.

"From the Pacific coast. Is much more beautiful than *Randia aculeata*, but it is suitable for hot climates only." (*Wercklé.*)

41496. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**

(*Persea gratissima* Gaertn. f.)

Seeds from San Jose, Costa Rica. Presented by the Department of Agriculture. Received November 24, 1915.

"*Palta.* From tree A, bearing in October; large and medium good." (*Wercklé.*)

41497. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**

(*Prunus persica* Stokes.)

Seeds from Bordeaux, France. Presented by Mr. George A. Bucklin, jr., American consul. Received November 26, 1915.

"For these seeds we are indebted to a resident of this region, M. Denjean, of Bordeaux, France, who has carefully selected seeds of the finest specimens of fruit coming to his attention, all grown in this section of southern France. Unfortunately, the names of the varieties have not been preserved and the seeds identified, but it is hoped that the seeds which come from excellent miscellaneous stock will be of some service." (*Bucklin.*)

41498. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**

(*Prunus persica* Stokes.)

Seeds from Milan, Italy. Presented by Mr. John H. Grout, American consul. Received November 26, 1915.

"Hardly any of the peaches to be found in the markets here are grown in this district, being brought from the outside. This is a mixed lot of seed obtained from a seed house here." (*Grout.*)

41499. Dipsacus fullonum L. Dipsacaceæ. **Teasel.**

Seeds from Marseille, France. Presented by Mr. A. Gaulin, American consul general. Received November 23, 1915.

"Seeds of the best variety of teasel grown in the Avignon and Department of Vaucluse region. This sample was obtained from Messrs. G. and E. Duckers, of Gavaillon, Vaucluse." (*Gaulin.*)

41500. Spathodea campanulata Beauv. Bignoniaceæ.

Seeds from Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received November 23, 1915.

See S. P. I. Nos. 31953 and 39415 for previous introductions.

41501. Mimusops elengi L. Sapotaceæ. **Munamal.**

Seeds from Lawang, Java. Presented by Mr. M. Buysman, Jardin Botanique. Received November 27, 1915.

"A large evergreen tree, with glossy, oval, fleshy leaves. The wood is good for cabinetmaking, joinery, and turning. The fruit, which is shaped like an olive, is eaten, but its flavor is not very agreeable. The odorous flowers, which possess astringent and tonic properties, serve for the preparation of a perfume; the red, woody, fibrous bark is astringent and is used as a gargle for salivation. The fruit and seeds furnish an oil for burning. The root is astringent." (*Lanessan, Les Plantes Utiles des Colonies Française.*)

See S. P. I. No. 30957 and 37726 for previous introduction.

41502. Arbutus unedo L. Ericaceæ. **Strawberry tree.**

Seeds from Sacramento, Cal. Presented by Mr. W. Vortriede, Capitol building and grounds. Received December 1, 1915.

"An evergreen tree, from 15 to 30 feet high, occasionally 40 feet in its native districts in Ireland, but nearly always a wide-topped shrub under cultivation; young shoots glandular hairy. Leaves smooth, 2 to 4 inches long, dark shining green. Flowers produced from October to December in drooping panicles 2 inches long and wide. Corolla white or pinkish, pitcher shaped, one-fourth inch long. Fruit globose, strawberrylike, three-fourths inch across, orange red, rough on the surface. It ripens during the autumn following the production of the flowers, at the same time as the succeeding crop of blossoms. Native of the Mediterranean region and southwestern Ireland, especially on the islands and shores of the Lakes of Killarney, where it attains its largest dimensions. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 203.*)

41503. Elaeocarpus sp. Elæocarpaceæ.

Seeds from Kamerunga, via Cairns, Australia. Presented by Mr. J. A. Hamilton. Received October 18, 1915.

"Native edible nut."

41504 to 41508.

Seeds from Matania El Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received November 30, 1915.

41504. Carissa grandiflora (E. Mey.) DC. Apocynaceæ. **Natal plum.**

"This handsome shrub, 15 to 18 feet in height, originally from South Africa, is cultivated in southern Florida and southern California for ornament and for its scarlet edible fruits the size of a plum. It is considered one of the best hedge plants in South Africa and is sometimes used for this purpose in the United States. The foliage is dense, glossy green in color; leaves opposite, thick, and leathery, 1 to 2 inches long, flowers star shaped, fragrant, about 2 inches across and borne in small terminal cymes. The plant blooms most abundantly in the early spring, but produces a few scattering flowers throughout the year; their waxy texture and fragrance are suggestive of the jasmine. The fruits, most of which ripen in summer, are ovoid or elliptic in form, commonly 1 to 2 inches long, with a thin skin inclosing the firm granular, reddish pulp, toward the center of which are several thin papery seeds, sometimes as many as twenty or more. The fruit is very attractive in appearance, but is not generally relished when eaten out of hand; its flavor suggests the raspberry or cranberry, and when stewed it yields a sauce which greatly resembles that made from the latter fruit. It is also used for jelly and preserves. It is not of commercial importance in the United States, but is frequently planted in gardens for ornament and fruit. When used as a hedge plant it withstands shearing admirably, but yields little fruit under these conditions. Its growth is compact and low, and it has the interesting habit of branching dichotomously. The plant is easily propagated by layering, and it is not difficult to bud, using the common method of shield budding. Late spring is the best time to do the work." (Adapted from *W. Popenoe*, in *Bailey, Standard Cyclopedia of Horticulture*, under *Natal plum, vol. 4, p. 2114.*)

See S. P. I. Nos. 11734, 28722, and 34166 for previous introductions.

41505. Carissa grandiflora (E. Mey.) DC. Apocynaceæ. **Natal plum.**

See previous number (S. P. I. No. 41504) for description.

41506. Carissa carandas L. Apocynaceæ. **Caraunda.**

"*Maha-karamba* (Singhalese), *Perunkila* (Tamil). A small tree or large shrub, with sharp, rigid, forked thorns and oval leaves, native of the dry region of Ceylon; also of India and Malaya. It blossoms chiefly in February and March and ripens its fruits in August and September. The fruit when ripe much resembles a damson, both in size and color, but in the interior are a number of small seeds. In India it is made into a pickle just before it is ripe, and is also used in tarts and puddings, being considered to resemble gooseberries in flavour. For these purposes it is said to be superior to any other Indian fruit. When ripe it makes a very good jelly. The plant is commonly employed for barrier hedges, for which purpose it is well suited. Propagated from seed. Suited to dry districts at low elevations." (*MacMillan, Handbook of Tropical Gardening and Planting, 2d ed., p. 149.*)

See S. P. I. Nos. 23750 and 34364 for previous introductions.

41507. Phoenix farinifera Roxburgh. Phœnicaceæ. **Palm.**

Habitat, India and South China. A dwarf species, having a stem 2 feet high, completely enveloped by the leaf sheaths; fronds 6 feet long,

41504 to 41508—Continued.

unarmed, pinnate, reclinate, with long, awl-shaped, plicate leaflets; flowers diœcious; spathe polyvalved; spadix erect; fruit a drupe, oval, 1 cm. in length, fleshy, black, hard; stone single, oblong, horny. In Cochin China the plant goes under the name *Cay-cho la*. The trunk stripped of its leaves contains a certain quantity of starch which the poor use in case of need. This palm stands the climate of the south of France without protection. It is adapted to sandy and otherwise dry and barren land, but prefers the vicinity of the sea. (Adapted from *Von Mueller, Select Extra-Tropical Plants, p. 373,* and *De Lanessan, Les Plantes Utiles des Colonies Françaises, p. 784.*)

See S. P. I. No. 32821 for previous introduction.

41508. MUSA sp. Musaceæ. Banana.

"Banana seeds which were produced without artificial pollination. I am not sure whether the pollen is from the same genus or from a Strelitzia growing near it. It is remarkable that only the variety *Orinoco* (from Florida) develops seeds, while several other varieties growing also in the vicinity are seedless." (*Bircher.*)

41509. OSTERDAMIA TENUIFOLIA (Trin.) Kuntze. Poaceæ.
(*Zoyisa tenuifolia* Trin.) **Mascarene grass.**

Seeds from the island of Guam. Presented by Mr. J. B. Thompson, Guam Agricultural Experiment Station; obtained by him from the Bonine Islands. Received in 1912.

"This grass is used for lawn purposes in Japan and is said to succeed well about Yokohama. It was originally described from the Mascarene Islands. It has been tested in a preliminary way in California, at Biloxi, Miss., and at Miami, Fla. The grass makes a very beautiful dark-green turf, the leaves being short, never more than an inch or two long, much resembling the turf of red fescue. Stout rootstocks are produced in abundance, and these have a tendency to elevate the turf, a defect which can be remedied by proper rolling. The grass has considerable promise for fine turf and for golf purposes in the South." (*C. V. Piper.*)

41510 to 41516. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

Seed from Quetta Valley, Baluchistan. Presented by Mr. A. Howard, Imperial Economic Botanist, Pusa, Bengal, India. Received November 2, 1915. Quoted notes by Mr. Howard.

41510. "Common winter wheat. Spike bearded, 10 to 13 cm., tapering; glumes white, firm, glaborous; beaks 1 to 25 mm.; kernel red, large, 7 to 8 mm., hard."

41511. "Common winter wheat. Spike bearded, 10 to 12 cm., cylindrical; glumes white, glabrous; kernel amber, medium soft; beaks (*a*) 7 heads, 1 to 15 mm., (*b*) 3 heads, 1 to 2 mm."

41512. "Common winter wheat. Spike bearded, beards short, 3 to 4 cm.; glumes white, pubescent, kernel amber, medium hard; beaks 1 to 3 mm."

41513. "Common winter wheat. Spike bearded, cylindrical, 10 to 12 cm.; glumes white, pubescent; kernel amber, medium hard; beaks 1 to 20 mm."

41510 to 41516—Continued.

41514. "Common winter wheat. Spike bearded, tapering, 9 to 12 cm.; glumes brown, glabrous; kernel red, medium soft; beaks 1 to 15 mm."

41515. "Common winter wheat. Spike bearded, cylindrical, 10 to 12 cm.; glumes brown, glabrous; kernel amber (?), medium soft; beaks 1 to 25 mm."

41516. "Common winter wheat. Spike bearded, beards short, 3 to 4 cm.; spike cylindrical, 10 to 11 cm.; glumes brown, pubescent; kernel amber, medium soft; beaks 1 to 25 mm."

41517 to 41519. Pyrus communis L. Malaceæ. Pear.

From Salmon Arm, Canada. Presented by Mr. Thomas A. Sharpe. Received December 3, 1915. Quoted notes from L. Späth's catalogue; except as otherwise shown.

41517. *Eva Baltet.* "A very large, beautifully colored, melting, sweet pear, very juicy, and similar in the quality of the flesh to the *Holzfarbigen butterbirne* (*Fondante des bois*), but better flavored. Tree bearing early and heavily from mid-October to the end of November. This new French introduction is declared by a large number of growers to be an excellent pear, worthy of distribution."

Mr. T. A. Sharpe, ex-superintendent of the Agassiz (B. C.) Experiment Station, is very much interested in pear culture and is fruiting out a good many French varieties. He told me that the *Jules Guyot* was a much heavier bearer than the Bartlett, which it resembles very closely, and it has none of the objectionable muskiness of the Bartlett, and that the *Marguerite Marillat*, which is one of the few pears that fruit on the west coast of Scotland, does very well at Salmon Arm, B. C. The variety called *Eva Baltet*, an early fall pear, does particularly well here, and fruits abundantly; it was introduced in 1897. The fruits do not pull down the limbs, and it begins fruiting at the crotch." (*David Fairchild, trip report to Canada including British Columbia, fall of 1915.*)

41518. *Doktor Jules Guyot.* "A large to very large, excellent table and market pear, ripening in September. Tree bearing early and very heavily; not tender.

41519. *Marguerite Marillat.* "A large to very large, fine table pear, bearing early and heavily."

41520 to 41554.

Seeds from Bhutan, India. Collected by Mr. R. E. Cooper, and presented by Bees (Ltd.), Liverpool, England, at the request of Mr. A. K. Bulley. Received November 18, 1915. Quoted notes by Mr. Cooper.

41520. Primula sp. Primulaceæ. Primrose.

"(No. 4761.) Grows at an altitude of 11,000 feet in marshy peat in the open. White with star of yellow on corolla lobes."

41521. Primula sp. Primulaceæ. Primrose.

"(No. 4762.) Two feet tall, like *sikkimensis*, but brilliant golden yellow flowers. Grows in open glades by streams in Abies forest at an altitude of 11,000 feet. Clumps on peaty turf on bowlders in the streams themselves."

41520 to 41554—Continued. (Quoted notes by Mr. R. E. Cooper.)

41522. Lloydia sp. Liliaceæ.

"(No. 4763.) Common in an open marsh at an altitude of 11,000 feet. Small, yellow flowered."

41523. Phyteuma sp. Campanulaceæ.

"(No. 4766.) A plant 2 feet high. Grows on alpine peat turf at an altitude of 13,000 feet, a gray hairy mound with pendent narrow leaves emerging. Flowers never seen. Attacked by yaks, sheep, partridges, and spiders."

41524. Wulfenia amherstiana Benth. Scrophulariaceæ.

"(No 4767.) A small herb found among loose pebbles and streams at an altitude of 14,000 feet, with rosette 6 inches in diameter. Flowers blue, small, in long spike."

41525. Meconopsis sinuata Prain. Papaveraceæ.

"(No. 4768.) A prickly plant 1 to 2 feet high among small rhododendron bushes at an altitude of 13,000 feet. Flowers blue, 2 to 3 inches in diameter."

41526. Swertia sp. Gentianaceæ.

"(No. 4769.) A white-flowered mound 1 foot high on poor peaty soil overlying scree at altitudes of 13,000 to 14,000 feet."

41527. Polygonum sp. Polygonaceæ.

"(No. 4770.) A clumpy Polygonum among stones and peaty spots in gaps in rhododendron forests at an altitude of 13,000 feet. Club 1 foot thick or rosette larger. Flower spike large and pendent, rich red, 10 inches long at times. Also seen in rock ledges at its best."

41528. Primula sp. Primulaceæ. Primrose.

"(No. 4771.) One to two feet high, growing among rhododendron bushes at an altitude of 13,000 feet. Like *Primula obliqua;* dead white with no eye to speak of and with heads of eight flowers."

41529. Potentilla sp. Rosaceæ.

"(No. 4772.) Common on uplands, at times in peaty turf, at altitudes of 13,000 to 15,000 feet. A little heap of yellow flowers 9 inches in diameter."

41530. Impatiens sp. Impatientaceæ.

"(No. 4773.) Growing in 6-inch turfs by a stream edge among sandy compost at an altitude of 12,000 feet. Flowers yellow."

41531. Caltha sp. Ranunculaceæ.

"(No. 4774.) A golden-yellow flowered, tufted plant in 2 inches of water in a swamp at an altitude of 13,000 feet."

41532. Swertia sp. Gentianaceæ.

"(No. 4775.) A small purple-flowered, procumbent-habited plant in peaty turf at an altitude of 13,000 feet."

41533. Cirsium sp. Asteraceæ.
(*Cnicus* sp.)

"(No. 4776.) Grows on scree among Juniperus at an altitude of 13,000 feet. Large, white haired, prickly. White head of one to five inflorescences, 2 inches in diameter.

41520 to 41554—Continued. (Quoted notes by Mr. R. E. Cooper.)

41534. CREMANTHODIUM sp. Asteraceæ.

"(No. 4777.) With yellow nodding heads, on dry exposed grass-covered slopes at altitudes of 13,000 to 14,000 feet."

41535 to 41540. PRIMULA spp. Primulaceæ. **Primrose.**

41535. "(No. 4779.) A small plant occurring in swampy peat at an altitude of 13,000 feet. Large flowers of delicate heliotrope, sweet scented; two to four in a head on a slender stem."

41536. "(No. 4780.) Like *sikkimensis*, but a smaller plant. Six inches high in swampy peat, growing with No. 41535. Flowers yellow, hanging three to five in a head; very delicate."

41537. "(No. 4781.) Among peaty soil and rocks of scree at altitudes of 13,000 to 14,000 feet. Flowers yellow."

41538. "(No. 4783.) A *P. nivalis?*) Grows among moist peaty turf among bowlders by streams at an altitude of 13,000 feet. Showy heads of purple flowers, with eye. Flowers appear before leaves."

41539. "(No. 4784.) Grows at edge of marsh in moist peat; altitude 13,000 feet. Reticulate, petiolate leaves and leafly bracts at base of loose inflorescences of yellow flowers of *sikkimensis* type."

41540. "(No. 4785.) Grows in marsh at an altitude of 13,000 feet; flowers small, white, in loose head; leaves small and coriaceous."

41541. MECONOPSIS HORRIDULA Hook. f. and Thoms. Papaveraceæ.

"(No. 4786.) Plant tufted on peaty turf at an altitude of 15,000 feet. Large sky-blue flowers."

41542 to 41544. PRIMULA spp. Primulaceæ. **Primrose.**

41542. "(No. 4787.) Grows in sandy soil on sheltered rock ledges at an altitude of 14,000 feet. Allied to *Primula tibetica*, but heads much looser and flowers larger."

41543. "(No. 4788.) A small primrose with large flowers, pale heliotrope, two to four on a loose spike. Grows in shaded crevices at an altitude of 13,000 feet."

41544. "(No. 4744.) Grows in moist peat at an altitude of 10,000 feet. Flowers yellow."

41545. POLYGALA sp. Polygalaceæ.

"(No. 3985.) The rosette is a nest of leaves 4 inches in diameter in moist peaty soil. There is a head of small white flowers one-half inch in diameter on a stalk 3 inches high; growing at an altitude of 11,000 feet."

41546. EUPHORBIA sp. Euphorbiaceæ.

"(No. 4351.) A tuberous herb growing on peaty slopes and meadows at an altitude of 9,000 feet. Inflorescences a showy gold."

41547. PRIMULA sp. Primulaceæ. **Primrose.**

"(No. 4392.) (Perhaps *Primula elongata*.) In fruit among rhododendron bushes at an altitude of 12,500 feet; flowers said to be white."

41548. PRIMULA PETIOLARIS Wallich. Primulaceæ. **Primrose.**

"(No. 4397.) A variety growing at an altitude of 12,000 feet and preferring moist soil, with dead leaves in compost in the shade of Betula, rhododendron bushes, etc. Rosette 1 foot in diameter, flower spike 1 foot high; seen only in fruit."

41520 to 41554—Continued. (Quoted notes by Mr. R. E. Cooper.)

41549. POLYGONUM sp. Polygonaceæ.

"(No. 4407.) A clump of Polygonum among stones and peaty spots in gaps in a rhododendron forest at an altitude of 13,000 feet. Clump 1 foot thick or rosette larger. Flower spike large and pendent, rich red, 10 inches long at times. Also seen in rock ledges at its best."

41550. AQUILEGIA sp. Ranunculaceæ.

"(No. 4410.) An herb 1 foot high in fruit among Cyananthus and moist undergrowth of Betula forest at an altitude of 10,000 feet. Flowers never seen."

41551. CORYDALIS sp. Papaveraceæ.

"(No. 4511.) An herb 1 foot high on moist gravel by a stream at an altitude of 11,000 feet. Very showy sprays of yellow, brown-tipped flowers, usually under light shade of Acers, etc."

41552. PRIMULA PETIOLARIS Wallich. Primulaceæ. **Primrose.**

"(No. 4512.) Differing from No. 41548 in leaves not being hastate. Found in fruit at an altitude of 12,000 feet in moist black soil under Abies forest. Plant similar in size to No. 4397 [S. P. I. No. 41548.]"

41553. RUBUS sp. Rosaceæ. **Bramble.**

"(No. 4513.) A bush 2 feet high, showy in autumn with silver foliage and orange-yellow fruits. Common in bamboo forests at an altitude of 11,000 feet."

41554. RUBUS sp. Rosaceæ. **Bramble.**

"(No. 4514.) A bush 4 feet high on edge of Abies forest at an altitude of 12,000 feet. Leaves dark green with reddish brown calyx and fruits."

41555. HEDYSARUM BOREALE Nutt. Fabaceæ.

Seeds from Saskatoon, Canada. Collected by Mr. David Fairchild, of the Bureau of Plant Industry. Received October 25, 1915.

"This hardy, short-seasoned, early-maturing Hedysarum was collected by Prof. T. N. Willing and myself in sight of the president's residence on the grounds of the University of Saskatchewan. It was growing on rather dry hillsides and produced a plant about 2 feet high. It is apparently a heavy seeder and, according to Prof. Willing, the cattle are very fond of it. So far as he knew, it had never been cultivated, and I sent it with the idea that it might be crossed with *Hedysarum coronarium* or with species of Hedysarum sent in by Mr. Meyer from Siberia. I can not help thinking that there may be something in the cultivation of this plant for forage purposes." (*Fairchild.*)

41556 to 41565.

Seeds from Bhutan, India. Collected by Mr. R. E. Cooper and presented by Bees (Ltd.), Liverpool, England, at the request of Mr. A. K. Bulley. Received November 18, 1915. Quoted notes by Mr. Cooper.

41556. GAULTHERIA sp. Ericaceæ.

"(No. 4525.) A low-creeping plant on rock surfaces and peaty alpine turf at an altitude of 12,000 feet. The showy blue berries are profuse. This is a much larger plant than the *Gaultheria trichophylla* and exists on exposed rock faces with only a mere suspicion of soil in occasional crevices."

41556 to 41565—Continued. (Quoted notes by Mr. R. E. Cooper.)

41557. Corydalis sp. Papaveraceæ.

"(No. 4528.) A slender herb in fruit under Abies forest at an altitude of 12,000 feet."

41558. Leycesteria formosa Wallich. Caprifoliaceæ.

"(No. 4535.) Caprifoliaceæ (?). A bush 6 feet high under light shade in Acer and Picea forest at an altitude of 10,000 feet. Flowers pink backed by red bracts, in dense sprays at end of fresh wood shoots."

41559. Clintonia sp. Convallariaceæ.

"(No. 4545.) A liliaceous plant found in loose peaty soil under rhododendron forest at an altitude of 10,500 feet. Two basal leaves and a head of delicate blue flowers pendent on a slender stem 6 inches long."

41560. Lonicera sp. Caprifoliaceæ. **Honeysuckle.**

"(No. 4553.) A slender bush 6 inches high by a stream under rhododendron and Abies forest at an altitude of 11,000 feet. Has pink waxy flowers in pairs and very showy reddish fruits."

41561. Salvia sp. Menthaceæ.

"(No. 4671.) A very fine herb 1 to 2 feet high, color vandyke to prune. In turf of exposed hilltop at an altitude of 9,000 feet."

41562. Coriaria terminalis Hemsl. Coriariaceæ.

"(No. 4736.) A procumbent shrub on sandy soil by streams and among bracken at an altitude of 10,500 feet; terminal sprays of red fruits 8 inches long. Quite hardy, I should say, as it occurs some 5,000 feet above the half hardy *Coriaria nepalensis*. Not so showy a plant as the latter, but trailing well over rock and gravel."

41563. Lonicera sp. Caprifoliaceæ. **Honeysuckle.**

"(No. 4737.) A bush 5 feet high by the edge of a stream among Salix and roses, with showy red fruits."

41564. Potentilla sp. Rosaceæ.

"(No. 4749.) On an exposed hilltop at an altitude of 10,000 feet in clayey soil. A silver rosette 4 inches across with sprays of yellow flowers."

41565. Hypecoum leptocarpum Hook. f. and Thoms. Papaveraceæ.

"(No. 4751.) A procumbent herb on gravelly sandy soil. Six inches across rosette, flowers smallish but profuse, of a delicate heliotrope to rose color; foliage steel gray."

41566. Prunus subhirtella autumnalis Makino. Amygdalaceæ. **Cherry.**

Plant from Colchester, England. Procured from R. Wallace & Co. Received December 4, 1915.

"Under the erroneous name of *Prunus miqueliana* this cherry has been cultivated in this country for some three or four years and has created a good deal of interest because of its flowering from November onward. Owing, probably, to the excessive mildness of the late autumn of 1913, it made a very charming display at that time. It is a deciduous small tree with nearly ovate leaves, 1½ to 3½ inches long, hairy on both surfaces. Flowers pale pink, 1 inch wide." (*Kew Bulletin.*)

41567. WASABIA PUNGENS Matsumura. Brassicaceæ. **Wasabi.**
(*Eutrema wasabi* Maxim.)

Roots from New York, N. Y. Presented by Mr. H. Terao. Received December 6, 1915.

"Before cooking, the graded wasabi is usually beaten so that the root cells may be mostly broken up, as you have perhaps learned in Japan. It is said that there is no *wasabi* for sale in New York City yet. Two Japanese restaurants here get 50 roots a year from San Francisco, where the *wasabi* comes from Japan." (*Terao.*)

41568. DIOSPYROS EBENASTER Retz. Diospyraceæ. **Black sapote.**

Seeds from Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. Received December 4, 1916.

A tall tree with fragrant white flowers and very sweet fruits, the size of an orange, green outside and almost black within. Native of Mexico. See S. P. I. Nos. 39719 and 40338 for previous introductions and full description.

41569. FRAXINUS EXCELSIOR L. Oleaceæ. **Ash.**

From Dublin, Ireland. Presented by Dr. A. Henry, Royal College of Science. Received December 1, 1915.

Var. *monophylla.* One-leaved ash. In this remarkable variety of the common European ash the terminal leaflet only, or occasionally one or two more, is developed. In other respects it is the same as the common ash. Its one leaf is oval or ovate, long stalked, toothed, and variable in size, usually 3 to 6 inches long, 1¼ to 2½ inches wide, but often proportionately broader or shorter. I have measured it as much as 8 inches long and 5 inches wide. This variety has arisen independently in many places, both cultivated and wild, and varied considerably. It is also known as *integrifolia*, *heterophylla*, and *simplicifolia*. The species itself is one of the most valuable of all our timber trees, yielding a whitish wood of great toughness and durability. Elwes considers it at the present time the most economically valuable of British timber trees. For some purposes, especially in coach building and implement making, it has no rival, either native or foreign. An isolated ash of goodly size makes a tree of great beauty and dignity, forming a shapely oval or rounded head of branches. It likes a deep moist, loamy soil, and thrives well on calcareous formations. In some parts of the north of England, on the east side of the Plain of York, for instance, it is a common hedgerow tree, almost as common as the elm is in the south. In such positions, especially where the adjoining fields are arable, it is not an unmixed advantage, being one of the grossest of feeders. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 567.*)

41570. INDIGOFERA TINCTORIA L. Fabaceæ. **Indigo.**

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received December 18, 1915.

See Sir George Watt's Commercial Products of India for a full description of the various indigo-yielding species of Indigofera and the cultivation and manufacture of indigo.

41571. CROTALARIA CUNNINGHAMII R. Brown. Fabaceæ.

From Wellington Point, near Brisbane, Queensland, Australia. Presented by Mr. James Pink. Received December 7, 1915.

"I am of the opinion that under cultivation it will prove an acquisition for ornamental planting, and in dry situations it may become a rival to the herbaceous Calceolaria. The plant grows about 2 feet high and will bear topping to any extent, every lateral throwing up a spike of flowers of bright orange yellow." (*Pink.*)

Though unattractive as to the color of the flower, this is a very curious and striking greenhouse plant, the soft velvety pubescence that clothes all the surfaces with a uniform glaucous hue at once arresting the attention. It is a native of the dry, almost desert regions of northwestern and central Australia, growing on sandy ridges, from Sharks Bay to the Gulf of Carpentaria, and penetrating southward through central Australia toward Spencers Gulf. A shrub 2 to 3 feet high, everywhere covered with a soft gray-green tomentum. (Adapted from *Curtis's Botanical Magazine, p. 5770.*)

41572. MALUS SARGENTII Rehder. Malaceæ.

From Tokyo, Japan. Presented by Dr. T. Watase, Tokyo Plant, Seed & Implement Co. Received December 4, 1915.

A shrub of bushy habit 3 to 5 feet high; leaves ovate to oval, 2 to 3 inches long, 1 to 2 inches wide; woolly when quite young, becoming nearly smooth before falling; flowers pure white, 1 inch across, produced in clusters of five or six; fruit orange shaped, one-half inch wide, bright red, the apex marked by the scar of the fallen calyx. I only know this species by a small specimen sent to Kew by Prof. Sargent in 1908. but it appears to be a pretty plant, and distinct among crabs by its purely bushy habit. It was originally discovered by Sargent in 1892 near a brackish marsh, Muroran, Japan, and was named in his honor by Mr. Rehder in 1903. The author observes that it is most nearly related to *P. toringo*, but differs in its larger, pure-white flowers with broad overlapping petals and in its larger fruits. From another ally, *P. zumi*, it is distinguished by its broader, often-lobed leaves, the shape of the broader based petals, the glabrous calyx tube, and the habit. Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 293.*)

41573. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**

(*Sechium edule* Swartz.)

From Camaguey, Cuba. Presented by Mr. Robert L. Luáces, director, Granja Escuela. Received December 20, 1915.

"Chayotes of the green variety. Of these four, one has been sprouted off the vine and the others on the vine. We, here in Cuba, either sprout on the vine or over water; that is, taking the chayote from the vine and putting it in the mouth of a wide-mouthed bottle until it sends out the sprout. It is also common to cut off the lower end of the fruit before planting and allow the wound to heal over either simply in the air or by covering the wound with ashes." (*Luáces.*)

41574. Baryxylum inerme (Roxb.) Pierre. Cæsalpiniaceæ.

(*Peltophorum ferrugineum* Benth.)

From Littleriver, Fla. Presented by Mr. Charles T. Simpson. Received December 3, 1915.

"A large, quick-growing, symmetrical tree, with a spreading top and fine graceful feathery foliage, indigenous to Ceylon and Malaya. The young leaves and shoots are covered with a brown velvet tomentum, from which the tree takes its specific name. The tree flowers twice a year at irregular seasons, some specimens being in blossom while others by its side are in ripe fruit. The flowers are rusty yellow, sweet scented, and borne in large erect panicles. Trimen, in his Flora of Ceylon, stated: 'It is a magnificent sight when in full bloom.' It is specially suited to dry districts, but also thrives to perfection in the moist region up to 1,800 feet." (*MacMillan, Handbook of Tropical Gardening and Planting, 2d ed., p. 299.*)

See S. P. I. Nos. 34330 and 38655 for previous introductions.

41575. Roystonea floridana Cook. Phœnicaceæ.

Florida royal palm.

The royal palm of Florida is commonly referred to *Oreodoxa regia,* though with very doubtful propriety. The branches of the inflorescence are much longer and more lax than those of the species of Cuba and Porto Rico, from which they also differ in the frequent development of tertiary branches, in this respect resembling *Roystonea oleracea.* The fruits do not resemble those of *Roystonea oleracea,* but are closely similar to those of the other species, though somewhat smaller and more nearly spherical. The Florida trees are from 28 to 35 meters high and occasionally as high as 45 meters, while the royal palms of Cuba and Porto Rico seldom exceed 18 meters. Mr. Charles T. Simpson, of the United States National Museum, states that the palms of southwestern Florida lack the conspicuous bulge so characteristic in the trunks of the Porto Rican trees and that they grow almost in reach of tidewater, while the natural habitat of the Porto Rican species is evidently the limestone hills. In view of these differences it seems preferable to treat the Florida royal palm as a distinct species, for which the name *Roystonea floridana* is proposed. (Adapted from *O. F. Cook, Bulletin of the Torrey Botanical Club, p. 554.*)

See S. P. I. No. 9731 and 17060 for previous introductions.

41576. Terminalia catappa L. Combretaceæ. Malabar almond.

From Littleriver, Fla. Presented by Mr. Charles T. Simpson. Received December 3, 1915.

A handsome deciduous tree with branches in horizontal whorls, large alternate leaves, clustered toward the ends of the branches and usually turning scarlet before falling, and an edible almondlike fruit.

"A very common tree in Guam, often growing near the shore, but also found inland. The kernels of the fruit are of a fine almondlike consistency and flavor. The crows (*Corvus kubaryi*) are very fond of them, and the natives eat them as delicacies, either fresh or candied. The bark and leaves are astringent and contain tannin. In India they are mixed with iron salts to form a black pigment, with which the natives in certain localities color their teeth and make ink.

This species is an excellent shade tree. It is of wide tropical distribution and is often planted for ornament and for the sake of the nuts. It has been introduced into Hawaii and the natives have applied to it the Polynesian name for *Calophyllum inophyllum* (*kamanu* or *kamani*), owing to the appearance of its foliage, which from a distance looks somewhat like that of the latter species. It is easily propagated from the seed. The wood is hard and of a reddish color, the sapwood lighter colored than the heartwood. In Guam it is used for troughs, carts, and posts, and if *daog* wood (*Calophyllum inophyllum*) can not be obtained, it is used for making cart wheels, though it is inferior to that species in toughness and durability. The Fijians and Samoans make drums of the hollowed trunks." (*Safford, Useful Plants of Guam, p. 385.*)

See S. P. I. Nos. 33192 and 33655 for previous introductions.

41577. PRUNUS SERRULATA SPONTANEA (Maxim.) Wilson. Amygdalaceæ. **Cherry.**

From Kyoto, Japan. Presented by Miss E. R. Scidmore, Yokohama, Japan. Received December 11, 1915.

"Cuttings of *Yama zakura* (mountain cherry), the *Giou* cherry tree in Maruyama Park (Sea-Mountain Park), Kyoto. It is a drooping variety, and these cuttings must be grafted on a drooping variety to get good results." (*Scidmore.*)

41578 to 41580. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Guatemala City, Guatemala. Presented by the American vice consul. Received December 8, 1915. Quoted notes by the vice consul.

41578. "Seeds of soft-skin avocados. All selected fruit which averaged in weight 1 pound 2 ounces."

41579. "Round; skin hard."

41580. "Soft-skin Guatemala avocados, weighing up to 1 pound each."

41581 to 41618.

From Bhutan, India. Collected by Mr. R. E. Cooper. Presented by Bees (Ltd.), Liverpool, England, at the request of Mr. A. K. Bulley. Received December 8, 1915. Quoted notes by Mr. Cooper.

41581. PRIMULA ELONGATA Watt. Primulaceæ. **Primrose.**

"(No. 4087.) In sandy peaty soil at an altitude of 13,500 feet. Flowers white on stem 1 foot long, rosette of glabrous leaves, 8 inches in diameter."

41582. MECONOPSIS HORRIDULA Hook. f. and Thoms. Papaveraceæ.

"(No. 4810.) A many-stemmed plant, 6 inches high at an altitude of 14,000 feet on peaty turf over scree. Flowers blue, large; plant prickly.

41583. SWERTIA sp. Gentianaceæ.

"(No. 4812.) Tufted gentianaceous plant, growing in peaty turf among dwarf rhododendrons at an altitude of 15,000 feet. Spike of blue flowers 4 inches long."

41581 to 41618—Continued. (Quoted notes by Mr. R. E. Cooper.)

41584. SAUSSUREA sp. Asteraceæ.

"(No. 4818.) With papery translucent bracts; grows among fragments of granite rock and peaty soil on scree at an altitude of 14,000 feet. Plant 10 inches high; head 4 inches in diameter."

41585. LILIUM sp. Liliaceæ. **Lily.**

"(No. 4819.) Grows in turf on rock ledges at an altitude of 13,000 feet. Flowers reddish green, hanging bell-like on a 6-inch stem."

41586. CARDAMINE sp. Brassicaceæ.

"(No. 4821.) Small slender rambling crucifer with showy blue flowers growing over grass or turf by a stream at an altitude of 12,000 feet."

41587. PRIMULA sp. Primulaceæ. **Primrose.**

"(No. 4822.) A *la tibetica* (blue sp.). Found only in fruit that was hardly ripe on exposed peak at an altitude of 16,000 feet, growing in a dryish but sunny position at the base of large overhanging rocks."

41588. ARENARIA sp. Silenaceæ.

"(No. 4824.) Tufted *Arenaria* sp. Grows on granite bowlders at an altitude of 14,000 feet. Flowers white."

41589. SALVIA sp. Menthaceæ.

"(No. 4825.) Pink-flowered, silvery, hairy plant 6 inches high on gravel and scarce peaty compost, mostly gravel, growing on scree at an altitude of 16,000 feet.

41590. MECONOPSIS NAPAULENSIS DC. Papaveraceæ.

"(No. 4827.) Plants growing on bare exposed hillside of patchy turf and bowlders at an altitude of 14,000 feet."

41591. SWERTIA HOOKERI C. B. Clarke. Gentianaceæ.

"(No. 4828.) A tall column (3 feet) of reddish flowers growing in peaty turf among dwarf junipers at an altitude of 13,000 feet."

41592. MECONOPSIS LYRATA (Cumm. and Prain) Fedde. Papaveraceæ.

"(No. 4840.) A yellow-flowered herb 3 feet high at base of rock cliffs in soil similar to that of Abies forest at an altitude of 11,000 feet."

41593. PRIMULA sp. Primulaceæ. **Primrose.**

"(No. 4855.) Allied to *Primula tibetica*, but only found in fruit not fully ripe on granite débris at an altitude of 16,000 feet."

41594. MORINA sp. Dipsacaceæ.

"(No. 4914.) Tall plant 1 to 2 feet high, arising from rosette of regular falling spiny leaves; whorls of reddish (?) flowers on upright prickly bracted stem; growing in sheltered recess of bare exposed hill in little plat of turf over gravel at an altitude of 10,500 feet."

41595. CORIARIA TERMINALIS Hemsl. Coriariaceæ.

"(No. 4757.)" See S. P. I. No. 41562 for previous introduction and description.

41581 to 41618—Continued. (Quoted notes by Mr. R. E. Cooper.)

41596. Sambucus adnata Wallich. Caprifoliaceæ.

"(No. 4794.) Caprifoliaceous herb on loamy bank in Picea forest at an altitude of 9,000 feet. Head 10 inches in diameter, of scented white flowers turning to red fruits."

41597. Saussurea gossipiphora D. Don. Asteraceæ.

"(No. 4815.) A white woolly mass 10 inches high and 6 inches in diameter, on granite and peaty débris at an altitude of 14,000 feet."

41598. Rubus sp. Rosaceæ. **Bramble.**

"(No. 4685.)"

41599. Allium sp. Liliaceæ.

"(No. 4816.) Three feet tall in moist turf and gravel by the edge of a stream, usually with *Primula sikkimensis*, at an altitude of 12,000 feet. Head of white flowers."

41600. Caragana sp. Fabaceæ.

"(No. 4882.) Tufted legume with wiry pinnate leaves, on exposed turf of hillside at an altitude of 12,000 to 13,000 feet.

41601. Caragana brevispina Royle. Fabaceæ.

"(No. 4883.) Spiny shrub 6 feet high. Grows in shade by stream in gravelly soil under Abies forest and oaks at an altitude of 10,000 feet."

41602. Potentilla coriandrifolia D. Don. Rosaceæ.

"(No. 4886.) A tufted herb 4 inches in diameter, growing in rock crevices and open thin turf over gravel at an altitude of 13,000 feet. Flowers white, center dark red."

41603. Swertia multicaulis D. Don. Gentianaceæ.

"(No. 4890.) A blue-flowered, tufted plant occurring in poor, black, sodden soil among scree débris (granite) at an altitude of 15,000 feet."

41604. Potentilla sp. Rosaceæ.

"(No. 4891.) Drooping lax habit, from rock ledges on granite bowlders and cliffs at an altitude of 15,000 feet."

41605. Saxifraga sp. Saxifragaceæ. **Saxifrage.**

"(No. 4893.) On peaty meadow at an altitude of 13,000 feet. Flowers yellow."

41606. Gentiana sp. Gentianaceæ. **Gentian.**

"(No. 4895.) Tufted plant on granite débris and a little peaty soil at an altitude of 15,000 feet. Flowers blue."

41607. Gentiana sp. Gentianaceæ. **Gentian.**

"(No. 4896.) Rosette plant growing among No. 4895 [S. P. I. No. 41606]. Flowers blue."

41608. Saussurea gossipiphora D. Don. Asteraceæ.

"(No. 4897.) A white woolly clump 8 inches in diameter, growing on rock ledges among stone chips and poor soil at an altitude of 15,000 feet."

41581 to 41618—Continued. (Quoted notes by Mr. R. E. Cooper.)

41609. Meconopsis sp. Papaveraceæ.

"(No. 4898.) A bushy, spiny plant among bowlders and gravel on an island of a stream at an altitude of 13,000 feet. Flowers, 24 to a plant, not seen. Either *Meconopsis horridula* or *Meconopsis sinuata*, but typical of neither."

41610. Hydrangea sp. Hydrangeaceæ.

"(No. 4900.) Bush 3 feet high in peaty and sandy soil in the shelter of a hill by a stream at an altitude of 12,000 feet. Best ever."

41611. Gentiana sp. Gentianaceæ. **Gentian.**

"(No. 4901.) An herb 4 feet high growing among rhodendron scrub at an altitude of 12,500 feet. Yellow, well-shaped flowers."

41612. Saussurea sp. Asteraceæ.

"(No. 4904.) A tufted plant in peaty turf at an altitude of 13,000 feet. Flowers purple, rosette 8 inches in diameter, leaves much cut and frilled."

41613. Saxifraga sp. Saxifragaceæ. **Saxifrage.**

"(No. 4905.) Mat habited on peaty turf at an altitude of 13,000 feet. Flowers pink and white on 2-inch upright stems."

41614. Saussurea sp. Asteraceæ.

"(No. 4906.) A woolly gray mound 6 inches in diameter on scree débris at an altitude of 14,000 feet. Flowers yellow."

41615. Cyananthus lobatus Wallich. Campanulaceæ.

"(No. 4908.) Procumbent herb on turf at an altitude of 13,000 feet, with erect, large blue flowers."

41616. Seseli sp. Apiaceæ.

"(No. 4909.) A graceful tufted umebllifer, 6 to 10 inches high, on sandy turf at an altitude of 13,000 feet. Head of pink and white flowers."

41617. Cyananthus sp. Campanulaceæ.

"(No. 4910.) (Perhaps new.) A small tufted plant, rosette only 4 inches in diameter in fruit. Grows in gravelly and peaty turf by a lake at an altitude of 13,000 feet."

41618. Anisomeles ovata R. Brown. Menthaceæ.

" (No. 4913.) An herb 4 inches high with white, solitary large flowers. On gravelly exposed sites at an altitude of 10,500 feet."

41619. Canavali obtusifolium (Lam.) DC. Fabaceæ.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison. Received December 15, 1915.

"A native pink-flowered bean growing on the beach or seacoast here to a length of 20 or 30 feet. It is regarded as a poisonous plant by some writers, although it is said to be a good poultry food." (*Harrison.*)

41620. Canavali gladiatum (Jacq.) DC. Fabaceæ. **Sword bean.**

From Chungking, China. Presented by Mr. E. Widler. Received December 21, 1915.

"*Ta tao tou*, great bean. A plant 10 to 15 feet long, bearing red flowers; it takes about six months to grow, and fruits in the autumn. It does best in a climate of 70° to 100° F. It bears fruit 1 foot 8 inches long, 5 inches in circumference. The seeds are light red and are used principally as a vegetable, being prepared by boiling. They sell in the market for 20 cash each string." (*Widler.*)

41621. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Orotina, Costa Rica. Presented by Mr. Carlos Wercklé. Received December 23, 1915.

Light green.

41622. GARCINIA sp.

From Brazil. Collected by Mr. H. M. Curran. Received December 20, 1915.

"Species cultivated in the Rio de Janeiro Botanical Gardens. Trees 30 to 40 feet high, 16 to 18 inches in diameter, with a heavy crop of large fruit, approximately 2 inches in diameter, with yellow acid flesh. Probably a common variety from India." (*Curran.*)

41623 and 41624.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens. Received December 16, 1915.

41623. EUCALYPTUS KIRTONIANA F. Mueller. Myrtaceæ. **Eucalyptus.**

"Seeds collected in this garden from trees known here for many years as *Eucalyptus saligna* and recently identified by Maiden as *Eucalyptus kirtoniana*. The seeds were probably originally from Australia." (*Hartless.*)

41624. TAMARIX DIOICA Roxburgh. Tamaricaceæ. **Tamarisk.**

A small tree with drooping branches and clustered twigs, smooth green leaves, and panicled spikes of small pink flowers with purple anthers. Native of India and Burma. (Adapted from *Hooker, Flora of British India, vol. 1, p. 249.*)

41625 and 41626. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Camaguey, Cuba. Presented by Mr. Robert L. Luáces, director, Granja Escuela. Received December 28, 1915.

41625. White. **41626.** Long green.

41627 and 41628. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received December 28, 1915.

41627. Round white, spiny. **41628.** Round green, spiny.

41629. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Guatemala City, Guatemala. Presented by Mr. William Owen, American vice consul in charge. Received December 28, 1915.

"Seeds from a very large *aguacate*, which I consider the finest product of Guatemala in that line. They are high grown, which will enable the tree to thrive better in a northern climate. Aguacate trees are not numerous in the immediate neighborhood of this city. I am compelled to depend almost entirely upon the goodness of distant friends." (*Owen.*)

41630 to 41637.

From Shanghai, China. Presented by Mr. H. O. Jacobson, Bureau of Agriculture, Manila, who secured them from Rev. J. M. W. Farnham. Received December 11, 1915.

41630. AGYNEJA IMPUBES L. Euphorbiaceæ.

41631 to 41634. BENZOIN spp. Lauraceæ.

41635. EUSCAPHIS JAPONICA (Thunb.) Dippel. Staphyleaceæ.
(*Euscaphis staphyleoides* S. and Z.)

See S. P. I. No. 41263 for previous introduction.

41636. VIBURNUM sp. Caprifoliaceæ.

41637. ARALIA CHINENSIS MANDSHURICA (Rupr.) Rehder. Araliaceæ.

See S. P. I. No. 35148 for previous introduction.

41638 to 41672.

From Brazil. Collected by Mr. H. M. Curran. Received December 20 to 23, 1915. Quoted descriptive notes by Mr. Curran.

41638 to 41640. ABELMOSCHUS ESCULENTUS (L.) Moench. Malvaceæ.
(*Hibiscus esculentus* L.) **Okra.**

"Common forms of okra grown in the mountains of Rio Contas, Bahia, Brazil."

41638. (No. 26.)
41639. (No. 27.)
41640. (No. 56.)

41641 to 41643. ALLIUM CEPA L. Liliaceæ. **Onion.**

"Common forms of onion grown in the mountains of Rio Contas, Bahia, Brazil."

41641. (No. 22.) White.
41642. (No. 22.) Red.
41643. (No. 22.) Yellow.

Bulbs.

41644. ARISTOLOCHIA sp. Aristolochiaceæ.

"(No. 13.) A very ornamental climber with heart-shaped velvety leaves. Flowers odd and interesting, but not showy. A rapid grower, covering trees and bushes by the river. Common in cleared lands along Rio Contas, Bahia, Brazil."

41645. BEGONIA sp. Begoniaceæ. **Begonia.**

"(No. 35.) Common wild form in forest of mountains of Rio Contas. Grows close to the ground; 4 to 6 inches; leaf large, entire, flower stalks erect, 2 to 3 feet high, with masses of white flowers. A showy ornamental."

41646. CAJAN INDICUM Spreng. Fabaceæ. **Pigeon pea.**

"(No. 11.) *Andu branco.* An edible bean, much like species grown in the Orient, but differs in minor ways. A tall bush 4 to 6 feet in height, bearing yellow, pearlike flowers. Planted in clearings in the mountains of Rio Contas, Bahia, Brazil."

41638 to 41672—Continued. (Quoted notes by Mr. H. M. Curran.)

41647. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"(No. 53.) Papaya, called by Brazilians *Mamão*. Common form that grows in the clearings in the mountains of Rio Contas, Bahia, Brazil. Of medium size and excellent flavor; not cultivated, but distributed by birds. Abandoned portions of clearings are often a pure forest of this plant."

41648. CHRYSOPHYLLUM sp. Sapotaceæ.

"(No. 55.) Sapotaceous fruit from wild trees in the forest. The fruit has a thin, tough skin and soft yellow flesh, with a texture much like that of a ripe persimmon. The flavor of the fruit is slightly acid and very agreeable. One of the best forest fruits I have ever eaten. From the forests of Rio Contas, Bahia, Brazil."

41649. CUCURBITA PEPO L. Cucurbitaceæ. **Squash.**

"(No. 37.) Common squash of clearings, Rio Contas mountains, Bahia, Brazil. Small or medium size, green exterior, yellow or orange flesh, of excellent flavor, said to keep six months. The specimens from which these seeds were obtained had very few seeds."

41650. DIOSPYROS GUIANENSIS (Aubl.) Guerke. Diospyraceæ.

"(No. 36.) Wild Diospyros; no common name. A small ornamental tree 20 feet high, 4 inches in diameter. Fruit probably not edible and possibly poisonous. Wood and character of fruit similar to a poisonous species in tropical Philippine forests which is used as a fish poison."

41651. EUGENIA DOMBEYI (Spreng.) Skeels. Myrtaceæ. **Grumichama.**
(*Eugenia brasiliensis* Lam., not Aubl.)

"With edible fruit. An ornamental shrub or small tree with small leaves."

41652. HIBISCUS BIFURCATUS Cav. Malvaceæ. **Mallow.**

"No. 33.) Common pink mallow of clearings and along river banks. A scandent shrub, or almost a vine. Very effective as seen from the river, with its great masses of pink bloom. Plant climbs 15 to 20 feet, and the slender branches could be trained over porches, etc. A very profuse and continual bloomer and one of the most showy flowers of the mountains of Rio Contas, Bahia, Brazil."

41653. IPOMOEA sp. Convolvulaceæ.

"(No. 29.) Showy vine of clearings; wild and also cultivated. A rapid grower with attractive foliage and large bright yellow flowers borne in profusion. Bahia, Brazil."

41654. ZINZIBER OFFICINALE Rosc. Zinziberaceæ. **Ginger.**

"(No. 58.) Common cultivated ginger of the clearings in the mountains of Rio Contas, Bahia, Brazil."

41655. ORYZA SATIVA L. Poaceæ. **Rice.**

"(No. 16.) Common rice cultivated along Rio Gorgueia, Bahia, Brazil. Probably not an irrigated form, but grown in clearings in the forest."

41656 to 41658. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"Lima or butter beans, grown in clearings in mountain forests, Rio Contas, Bahia, Brazil. These beans climb over mandioca plants and brush in clearings."

41656. "(No. 15.) White beans, of excellent flavor, borne abundantly."

41638 to 41672—Continued. (Quoted notes by Mr. H. M. Curran.)

41657. "(No. 1.) Black and white Lima beans of good flavor. A common form in clearings."

41658. "(No. 12.) Black and white Lima beans of good flavor. A common form in clearings."

41659 and 41660. PHASEOLUS VULGARIS L. Fabaceæ. **Bean.**

"Common beans of the natives, called *Feijãos*. With mandioca meal, the staple diet of the common people. Easily cooked and of good flavor. Planted in forest clearings. Plants seen were of bushy habit, but inclined to climb. Many varieties are grown, varying from red to jet black and the common spotted bean. In the mountains of Rio Contas, Bahia, Brazil."

41659. (No. 10.) **41660.** (No. 24.)

41661 to 41664. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor bean.**

41661. "(No. 4.) Called *Mamoneira*. A small variety growing wild in light sandy soil on clearings near the river. Castor beans form dense thickets on pasture lands in this region. This is the smallest of the three types collected in the region, all of which grow in more or less intimate mixture, and it is said to yield the best oil and the largest quantity."

41662. "(No. 8.) The largest plant and the largest seed; a very heavy bearer. Forms a tree 15 to 25 feet high. Said to yield less oil than the smaller variety. Grows in light sandy soil on clearings near the river. Called *Mamona* or *Carrapato*. Mountains of Rio Contas, Bahia, Brazil."

41663. "(No. 14.) A third form of castor bean, commonly growing wild in light sandy soil on clearings near the river. A tall grower and heavy fruiter. Rio Contas, Bahia, Brazil."

41664. "(No. 25.) Probably the same form of castor bean as No. 14 [S. P. I. No. 41663]. Rio Contas, Bahia, Brazil."

41665. SICANA ODORIFERA (Vell.) Naud. Cucurbitaceæ. **Melocoton.**

"(No. 34.) Common half-wild yellow-fleshed melon of clearings, mountains of Rio Contas. It is 12 to 14 inches long by 3 to 5 inches in diameter, with a reddish and tough, not very palatable flesh. A strong grower, which climbs on trees in clearings."

41666 to 41670. THEOBROMA CACAO L. Sterculiaceæ. **Cacao.**

41666. "(No. 62.) Var. *Para*. These seeds are from the largest and most nearly perfect fruits found in a young vigorous plantation on new soil; mountains of Rio Contas. They represent the best type of cacao grown in this region. Rio Contas basin is one of the big cacao regions and produces a fine quality of cacao beans."

41667. "(No. 63.) See No. 62 [S. P. I. No. 41666] for description."

41668. "(No. 64.) *Eggshell* variety. A small form of fruit with a thin shell and few seeds. Occurs in all plantations, but not selected for planting, as the yield is less. From a young vigorous plantation on new soil. Mountains of Rio Contas, Bahia, Brazil."

41638 to 41672—Continued. (Quoted notes by Mr. H. M. Curran.)

41669. "(No. 65.) Var. *Para*, called *Maranhão*. Probably the same as Nos. 62 and 63 [S. P. I. Nos. 41666 and 41667], though preferred by certain planters. Large perfect fruits selected by Col. Manoel Couros from trees on his plantation were the sources of these seeds."

41670. "(No. 66.) Var. *Para*. See No. 65 [S. P. I. No. 41669] for description."

41671. Vigna sesquipedalis (L.) Fruwirth. Fabaceæ.
(*Dolichos sesquipedalis* L.) Yard-long bean.

"(No. 57.) Yard-long bean; a climbing variety with edible pods. A rapid grower, said to fruit in 30 days. Rio Contas, Bahia, Brazil."

41672. Citrus aurantium L. Rutaceæ. Sour orange.

"Wild or *Bello* orange. The common orange of clearings. Seeds distributed by birds. A common form in all regions of South America where oranges are grown. A small vigorous tree, practically free from disease. Fruits at an early age and bears an immense crop of dark rust-red perfect oranges. The skins are thick, and they separate from the pulp as easily as those of the mandarin. The pulp is fine grained, very juicy, and with only a slightly bitter taste (in this specimen). Many people prefer this to the sweet orange. To me, it is one of the most refreshing fruits I know. It should prove a good stock for budding, and may prove useful in developing a new variety of table orange."

41673 to 41678.

From India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens, Seharunpur, at the request of Mr. A. Howard, Imperial Economic Botanist, Pusa. Received December 30, 1915. Quoted notes by Mr. Hartless, except as otherwise indicated.

41673 to 41676. Rubus spp. Rosaceæ.

Collected at Darjiling.

41673. Rubus niveus Thunb.
(*Rubus lasiocarpus* Smith.)

41674. Rubus alpestris Blume.

41675. Rubus calycinus Wallich.

41676. Rubus pedunculosus Don.
(*Rubus niveus* Wallich, not Thunb.)

"A deciduous shrub, with very stout, erect, biennial stems 1 to 1½ inches thick and in vigorous plants 4 to 6 yards high, covered with a thick velvety down and sprinkled over with minute prickles. Leaves 6 to over 12 inches long, composed of three to five leaflets. Flowers white or pale pink, one-half inch across, the petals shorter than the sepals. Fruits blue-black, small. Native of west and central China, whence it was introduced about 1901; the species had, however, been known to botanists as far back as 1825 from plants growing on the Himalayas. The Chinese plants are chiefly remarkable for their vigor; Mr. Wilson states that it is occasionally 20 feet high. It is the most robust of all the Rubi; hardy in Britain, as

41673 to 41678—Continued. (Quoted notes by Mr. A. C. Hartless.)

may be seen by the plants in the Kew collection." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 458,* under *R. gracilis.*)

41677 and 41678. RUBUS spp. Rosaceæ. **Blackberry.**

"Collected at Dehra Dun, which is subtropical. These two species have a very wide range as to altitude and are really the two best species from an edible point of view."

41677. RUBUS NIVEUS Thunb.
(*Rubus lasiocarpus* Smith.)

"In the Western Ghats *Rubus lasiocarpus* is well known as the blackberry of India. It is even grown with success at Bangalore."

41678. RUBUS ELLIPTICUS Smith.

41679. KOELREUTERIA FORMOSANA Hayata. Sapindaceæ.

From Taihoku, Formosa. Presented by Mr. Genjiro Takata, chief, Bureau of Productive Industry. Received December 31, 1915.

An indigenous Formosan tree related to *K. bipinnata* Franch., but differing from that species in having subentire leaflets. A small handsome tree with bipinnate leaves and terminal spreading clusters of yellow flowers.

41680. ELEOCHARIS TUBEROSA (Roxb.) Schultes. Cyperaceæ. **Apulid.**

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Bulbs received December 28 and 29, 1915.

"Small corms of *Apulid.* Larger forms are great favorites with the Chinese." (*Edwards.*)

"They are mostly eaten raw, but are also sliced and shredded in soups, and in meat and fish dishes. Foreigners in China grate them and serve them boiled as a winter vegetable, in which state they very much resemble sweet corn in looks and taste. The plants need a hot summer to mature and are grown on a muck or clayey soil with several inches of standing water on top, in very much the same manner as wet-land rice." (*Frank N. Meyer.*)

41681. MELASTOMA MOLKENBOERII Miquel. Melastomaceæ.

From Lawang, Java. Presented by Mr. M. Buysman, Jardin Botanique. Received December 30, 1915.

A large shrub or small tree, 15 to 20 feet high, with oblong or ovate-lanceolate, 5-nerved, pubescent leaves and terminal, rose-colored flowers in fascicles of three to five. (Adapted from *Koorders and Valeton, Mededeelingen uit s'Lands Plantentuin, No. 33, p. 183, 1900.*)

41682 to 41684. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

From Pusa, India. Presented by the Imperial Economic Botanist. Received December 16, 1915.

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THE FARMERS OF THIS COUNTRY are as efficient as any other farmers in the world. They do not produce more per acre than the farmers in Europe. It is not necessary that they should do so. It would perhaps be bad economy for them to attempt it. But they do produce by two to three or four times more per man, per unit of labor and capital, than the farmers of any European country. They are more alert and use more labor-saving devices than any other farmers in the world. And their response to the demands of the present emergency has been in every way remarkable. Last spring their planting exceeded by 12,000,000 acres the largest planting of any previous year, and the yields from the crops were record-breaking yields. In the fall of 1917 a wheat acreage of 42,170,000 was planted, which was 1,000,000 larger than for any preceding year, 3,000,000 greater than the next largest, and 7,000,000 greater than the preceding five-year average.

But I ought to say to you that it is not only necessary that these achievements should be repeated but that they should be exceeded. I know what this advice involves. It involves not only labor but sacrifice, the painstaking application of every bit of scientific knowledge and every tested practice that is available. It means the utmost economy, even to the point where the pinch comes. It means the kind of concentration and self-sacrifice which is involved in the field of battle itself, where the object always looms greater than the individual. And yet the Government will help, and help in every way that is possible.—*From President Wilson's message to the Farmers' Conference at Urbana, Ill., January 31, 1918.*

Issued September 6, 1919.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1916.

(No. 46; Nos. 41685 TO 42383.)

WASHINGTON:
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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1916 (NO. 46; NOS. 41685 TO 42383).

INTRODUCTORY STATEMENT.

This forty-sixth inventory of seeds and plants covers a period when no official agricultural explorer was in the field, so the descriptions are all of material sent in by correspondents or collaborators.

The most interesting of the introductions, judged before they are tested, appear to be the following:

Thirty-five selected varieties of wheat (Nos. 42102 to 42136), the result of much work in selection and acclimatization by the plant breeders of Victoria, some of them being of recent introduction into Australia, while others are selections from types of old Australian wheats. These were supplied by Mr. A. E. V. Richardson. Twenty-six varieties of wheat (Nos. 41991 to 42016) from the United Provinces of India, representing some old Indian types, were presented by Mr. H. Martin Leake, of Cawnpore. While none of these may prove especially valuable, it should be kept in mind that it was out of a cross between an Indian wheat, Ladoga, and the Red Fife that the famous Marquis wheat of Canada came.

The discovery by the plant breeders of the Southeastern Agricultural College of England of a nematode-resistant variety of hops, *Humulus lupulus* (No. 42024), should call the attention of growers to the resistance of this variety to the disease known as nettlehead, or skinkly, and it may prove valuable in our hop fields.

Since Mr. C. V. Piper's preliminary study of forage plants during his trip to India in 1911, he has continued to test many of the wild and cultivated grasses of that region, and Nos. 41885 to 41900, 41902 to 41907, 41910 to 41915, and 41918 to 41921 represent a remarkable collection of these grasses presented by Mr. William Burns, the economic botanist of the station at Kirki, India. Among them are included: *Andropogon annulatus* (No. 41885), a species well adapted to the Gulf States; *Cenchrus biflorus* (No. 41894), related to our sand bur, but considered in northern India as one of their most nutritious grasses; *Chloris paraguaiensis* (Nos. 41759 and 41897), related to Rhodes grass, but native of Burma and Ceylon, considered a good fodder grass in northern India and in Australia one of the best grasses for pasturage and hay; *Chrysopogon montanus* (No. 41899), a handsome species 3 to 5 feet tall, which already shows promise in Florida and Mississippi; *Iseilema wightii* (No. 41914), a natural pasture grass of India; *Pennisetum ciliare* (No. 41915), a most valuable pasture and hay grass there; and *Thelepogon elegans* (No. 41918), which grows in the Indian rice fields and can scarcely be distinguished from rice until it flowers.

The bread-nut tree of Yucatan, *Brosimum alicastrum* (No. 41880), the leaves of which are extensively used for forage purposes there, deserves trial in southern Florida, according to Dr. Lavedan, who sends the seeds.

Through Mr. Roland McKee, who secured it at the Australian exhibit of the Panama-Pacific Exposition, a collection of Australian fodder grasses (Nos. 41744 to 41762) is now being tested. It includes the extremely productive kangaroo grass, the cockatoo grass, the rice-grass, sugar grass, three species of grasses related to Rhodes grass, and *Panicum distachyon* (No. 41746), which ranks as one of the best of the indigenous grasses of northern Australia.

The true tropical yams (*Dioscorea* spp.) have grown so well in Florida and the quality of their tubers is so excellent that the introduction from Panama by Mr. O. W. Barrett of three selected strains (Nos. 42052 to 42054) is of special interest.

A palm, *Chamaedorea tepejilote* (No. 41705), the inflorescence of which forms a regular source of excellent food in the State of Vera Cruz, Mexico, according to Dr. C. A. Purpus, will grow on sandy soil and might accommodate itself to conditions in Florida.

A tall-growing variety of the ordinary bean, the tawana, or taguana (No. 42049), which climbs 15 to 20 meters into the tops of the high trees in Paraguay and produces heavy crops of beans, will be interesting to bean growers, even though it may not be a valuable acquisition.

The existence in the Dominican Republic of an indigenous walnut, *Juglans domingensis* (No. 41930), related to our black walnut, will interest those engaged in the hybridization of the species of Juglans; and the gathering together for propagation and distribution by Mr. C. A. Reed of the hardiest and best seedlings of the Persian or English walnut, *Juglans regia* (Nos. 42022 and 42023 and 42041 to 42045), from New York State and Canada, can not fail to attract attention to the neglect which the horticulturists of our Eastern States have shown to the possibilities of walnut culture on this side of the Rockies.

The Queensland nut, *Macadamia ternifolia* (No. 41808), has grown and fruited so well in California and Florida and its nuts are so delicious that it is a wonder more has not been done with it, especially in Hawaii, where trees planted 30 years ago have borne good crops, according to Mr. C. S. Judd, of the Board of Commissioners of Agriculture and Forestry, who sends in a quantity of seeds.

Although it is extremely doubtful whether the Tangutian almond, *Amygdalus tangutica* (Nos. 41708 and 41709), can be used as a stock for almonds, it should certainly be hybridized with the ordinary almond, if possible, and the production of a bush almond at least attempted. The large number of seeds sent in by Rev. C. F. Snyder from Kansu, China, may bring about this hybrid.

Although in quality American varieties of the peach lead the world, there may yet be found varieties less susceptible to the many peach diseases than those we have, and the collection (Nos. 41731 to 41743) from Seharunpur, India, may contain such varieties.

The search for grapes suited to the conditions of the Southern States and possibly capable of breeding with the Muscadine has brought in *Vitis tiliaefolia* (No. 41707) from Vera Cruz, Mexico, and *Vitis davidii* (No. 41877), from central China.

The subtropical and East Indian plum, *Prunus bokhariensis* (No. 42057), from Simla, which resembles *Prunus salicina*, may play a rôle in the production of a plum for our Southern States.

The service tree of southern Europe, *Sorbus domestica* (No. 41703), which grows into such a stately, beautiful tree and bears palatable fruits, appears to have been strangely neglected by horticulturists.

Although very many varieties of the Japanese persimmon have already been introduced, the extensive collections from Okitsu (Nos. 41691 to 41702, 41779 to 41793, and 42138 to 42165) may contain some better suited to our conditions or less astringent than those we are testing.

The Brazilian expedition sent out by this office in 1913 discovered in the campo near Lavras a strange and quite remarkable fruit, *Eugenia klotzschiana* (No. 42030), characterized by a marked fragrance. Through the kindness of Mr. Hunnicutt a quantity of seeds has been secured and the species will be given a thorough trial.

Solanum quitoense (No. 42034), the naranjilla of Quito, with fruits the size and color of small oranges, which form the principal article of food of the settlers during certain seasons, should certainly be given a trial in this country.

So much interest has been aroused in the Japanese flowering cherry trees through the gift to the city of Washington by the mayor of Tokyo of a collection of them and through the satisfactory growth which specimen trees have made in Maryland, Massachusetts, and California, that a demand for them has grown up which nurserymen find it difficult to meet. It is of interest, therefore, to point out that 54 varieties (Nos. 41817 to 41870) from the municipal collection of Tokyo, near Arakawa, which represent the loveliest of the hundreds of varieties known to the Japanese, have been secured through the mayor's courtesy, and these will be propagated and distributed under the same varietal names as those they bear in the Arakawa collection.

Paulownia tomentosa has become such a feature in our parks that a new species of this tree, *Paulownia fortunei* (No. 42036), with larger flowers, from Formosa, will be watched with interest. Bentham's cornel from Nepal, *Cornus capitata* (No. 42287), with dense heads of yellowish flowers and deep-orange fruits, the size of nectarines, will interest those with whom the American dogwood is a favorite.

The oriental species are not the only bamboos of value for timber, and those living in the Tropics will want to test the takuara of Paraguay, *Bambos guadua* (No. 42066), a species evidently too tender for Florida.

Those interested in tropical timber trees will find some remarkable ones in the collections introduced from Madagascar (Nos. 42355 to 42376), Argentina (Nos. 42321 to 42332), or in the famous jequitiba of Brazil (No. 41933), one of the largest and most beautiful of all tropical forest trees, now introduced for the first time by the forest expert, Mr. H. M. Curran, from Bahia.

The manuscript of this inventory has been prepared by Miss Ethel M. Hipkins, the botanical determinations of seeds introduced have been made and the botanical nomenclature revised by Mr. H. C. Skeels, and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory, as of all the publications of this office.

David Fairchild,
Agricultural Explorer in Charge.

Office of Foreign Seed and Plant Introduction,
Washington, D. C., May 31, 1919.

INVENTORY.[1]

41685. Erianthus rufipilus (Steud.) Griseb. Poaceæ.
(*Erianthus fulvus* Nees.) **Plume-grass.**

From Darjiling, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Gardens, at the request of the superintendent, Royal Botanic Gardens, Sibpur, near Calcutta. Received January 20, 1916.

A perennial grass, 6 to 8 feet high, found in the temperate Himalayas at altitudes of 5,000 to 7,000 feet. The narrow leaves are 2 to 3 feet long and the panicles are 8 to 18 inches long, gray-white or tinged with purple. (Adapted from *Collett, Flora Simlensis, p. 595.*)

See S. P. I. No. 39689 for previous introduction.

41686. Butia capitata pulposa (Barb.-Rodr.) Becc. Phœnicaceæ. **Palm.**

From Fruitland Park, Fla. Presented by Mr. Louis P. Bosanquet. Received January 21, 1916.

Stems 30 to 40 feet high, somewhat fusiform above; leaves about half as long as the caudex, the withered ones deflexed, pendent, the upper ones spreading, often arching. In southern Brazil, near the sea, according to recent characterizations, it comprises a wide variety of forms. Probably the *Cocos flexuosa* planted in this country is not *Cocos flexuosa* of Martius, but of Hort., a hardy form of *romanzoffiana*, which, according to the late Barbosa-Rodrigues, is a polymorphic species, including, besides this *flexuosa* type, all our garden forms known as *C. plumosa* Hook., *C. coronata* Hort. (not Mart.), *C. botryophora* Hort., *C. datil* Griseb. and Drude, and *C. australis* Mart. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 814.*)

See S. P. I. No. 37745 for previous introduction.

41687. Lilium giganteum Wall. Liliaceæ. **Lily.**

From Boulder, Colo. Presented by Mr. Theodore D. A. Cockerell. Received January 24, 1916.

" Seeds of *Lilium giganteum* sent by Mr. J. Henry Watson, Withington, Manchester, England. They were grown in 1915 by Sir Herbert Maxwell, of Wistownshire, Scotland." (*Cockerell.*)

"A beautiful, stately lily, rarely cultivated in this country, but hardy as far north as Boston and easily grown in light well-drained soil; should be heavily mulched during the winter; also excellent for greenhouse benches or large tubs. After once flowering, the old bulb decays and disappears, leaving several offsets." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1877.*)

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[1] Each introduction consists of seeds, except where otherwise stated.

41688. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Guatemala, Guatemala. Presented by Mr. William Owen, American vice consul in charge. Received January 13, 1916.

"Seeds of a very large aguacate, which I consider the finest product of Guatemala in that line. They are high grown, which will enable the tree to thrive better in a northern climate." (*Owen.*)

41689. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From New Orleans, La. Presented by the J. Steckler Seed Company. Received January 24, 1916.

"Green, spiny."

41690. CUPRESSUS GLABRA Sudw. Pinaceæ. **Smooth cypress.**

From Sedona, Ariz. Purchased from Mr. J. F. Derrick. Received January 25, 1916.

"Collected in Oak Creek Canyon."

In general appearance the foliage of smooth cypress resembles that of Arizona cypress (*Cupressus arizonica* Greene), though the former species can be distinguished from the latter by the compact, narrowly oval, or somewhat pyramidal crown. The branches of the smooth cypress, particularly of younger trees, are strongly upright. Old trees grown in the open develop long lower branches, which from their great weight are less upright than those of trees of the same age in a close stand. In height the trees range from 25 to 30 feet and in diameter from 10 to 14 inches, though much larger trees probably exist. The trunk is slightly tapering, while the upper portion is sometimes divided into several branches, differing in this respect from the usual undivided stem of Arizona cypress. Only about one-fourth to one-third of the trunk is clear of branches. The most distinctive characteristic of this tree is its thin, smooth, dark purple-red bark. The foliage is a bright blue-green (glaucous). The small spherical cones, composed of six to eight scales and armed with large incurved, somewhat flat-pointed bosses, are borne on short stout stems and mature at the end of the second season. The large size of the seeds at once distinguishes them from those of Arizona cypress, though in color and form the two are similar. Thoroughly seasoned wood is moderately durable in contact with the soil, fence posts lasting about 20 years and corral poles 30 to 35 years. Cabins built of the logs 40 years ago are still in a good state of preservation. The small size of the trees and the limited supply have confined the use of the wood mainly to local needs. The extreme age attained by this species has not yet been determined, but it is probably as long lived as Arizona cypress. The largest trees found so far are at least 200 or 250 years old. (Adapted from *Bulletin No. 207, U. S. Dept. of Agriculture, The Cypress and Juniper Trees of the Rocky Mountain Region, p. 9.*)

41691 to 41702. DIOSPYROS KAKI L. f. Diospyraceæ. **Kaki.**

From Okitsu, Japan. Cuttings presented by Prof. Ishiwara, Government Horticultural Experiment Station. Received January 8, 1916. Notes by Mr. T. Kiyono, Semmes, Ala.

41691. "No. 1. *Anzai.* Sweet. Kiyoto Province."

41692. "No. 2. *Kubo.* Sweet. Kiyoto Province."

41691 to 41702—Continued.

41693. "No. 3. *Hon-gosho.* Sweet. Nara Province."

41694. "No. 4. *Toyo-oka.* Sweet. Nara Province."

41695. "No. 5. *Fijuwara-gosho.* Sweet. Nara Province."

41696. "No. 6. *Chiomatsu.* Astringent. Kanagawa Province."

41697. "No. 7. *Osoraku.* Astringent. Chiba Province."

41698. "No. 8. *Ibogaki.* Astringent. Miyagi Province."

41699. "No. 9. *Benigaki.* Astringent. Miyagi Province."

41700. "No. 10. *Hira-sanenashi.* Astringent. Yamagata Province."

41701. "No. 11. *Sakushu-mishirazu.* Astringent. Okayama Province."

41702. "No. 12. *Hiragaki.* Astringent. Wakayama Province."

41703. SORBUS DOMESTICA L. Malaceæ. **Service tree.**
(*Pyrus sorbus* Gaertn.)

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received January 3, 1916.

"A deciduous tree, usually 30 to 50 feet (occasionally 60 to 70 feet) high. Native of south and east Europe. Flowers white, about one-half inch across, produced in May in panicles at the end of short branches and from the leaf axils, the whole forming a rounded or rather pyramidal cluster 2½ to 4 inches wide. Fruit pear shaped or apple shaped, 1 to 1¼ inches long, green or brown tinged with red on the sunny side. As an ornamental tree this is inferior to its ally, the mountain ash, but is well worth growing for the beauty of its foliage and for its flowers, which are larger than usual in this group. It also attains to greater dimensions than any of its immediate allies. The largest tree whose dimensions are recorded by Elwes is growing at Woodstock, Kilkenny, Ireland, which in 1904 was 77 feet high and 10 feet 8 inches in girth. The fruit of the service tree is sometimes eaten in a state of incipient decay, especially in France. Mr. E. Burrell, late gardener to H. R. H. the Duchess of Albany, at Claremont, in a letter dated November 11, 1883, observes that 'we are sending good fruits of the pear-shaped service for dessert at the present time.' This Claremont tree was blown down in 1902, and was then close upon 70 feet high. The timber is of fine quality, being very hard and heavy, but too scarce to count for much." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 295.*)

For an illustration of the service tree, see Plate I.

41704. PRUNUS HORTULANA Bailey. Amygdalaceæ.

From Courtney, Mo. Presented by Mr. B. F. Bush. Received January 4, 1916.

"The species was first distinguished in 1892 to designate varieties of plums intermediate between *Prunus americana* and *P. angustifolia* (the two species at that time clearly separated); these intermediate varieties were then said to 'represent at least two other species, and perhaps even more,' one of which it was proposed to separate as *P. hortulana.* Later students have separated *P. munsoniana* from these varieties and have redefined other species. Subsequently it was supposed that *P. hortulana* represents a range of hybrids between *P. americana* and *P. angustifolia,* and it is not yet known what part hybridization has played in the origin of these forms, although the evidence accumulates that separate specific types are involved." (*Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2828.*)

41705 to 41707.

From Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received January 5, 1916. Notes from Dr. Purpus.

41705. CHAMAEDOREA TEPEJILOTE Liebm. Phœnicaceæ. **Palm.**

"The undeveloped flower makes an excellent vegetable and is eaten everywhere in the State of Vera Cruz. Besides, it is a fine little palm. Grows in shady places."

41706. PSIDIUM GUAJAVA L. Myrtaceæ. **Guava.**

"Wild guava; in dry and sunny places."

41707. VITIS TILIAEFOLIA Humb. and Bonpl. Vitaceæ. **Grape.**
(*Vitis caribaea* DC.)

"This Vitis has a very sour fruit, but it makes a most excellent jelly, like currant jelly, and is adapted to a tropical country; grows in sunny places in brush woods. *Vitis vinifera* can not be raised here at all."

41708 to 41710.

From Taochow (Old City), Kansu, China. Presented by Rev. C. F. Snyder, at the request of Mr. Frank N. Meyer, of the Bureau of Plant Industry. Received January 3, 1916.

41708 and 41709. AMYGDALUS TANGUTICA (Batal.) Korsh. Amygdalaceæ.
(*Prunus tangutica* Koehne.) **Tangutian almond.**

"*Amygdalus tangutica* is a variable species of bush almond, and though its kernels are bitter and it throws up a lot of stems and is spiny, still I believe it has a decided value as a factor in breeding experiments, for it seems to be very hardy and drought resistant. One finds it mainly on sheltered rocky and loess slopes at elevations from 4,000 feet above the sea up to about 10,000 feet. In these higher regions, however, it does not get as cold as one would surmise, for the mountains all around keep off the intense cold. As a stock for almonds and for other stone fruits I scarcely would recommend this Tangutian almond, since it suckers badly and these suckers are very hard to remove." (*Meyer.*)

41708. "Rough shelled." **41709.** "Smooth shelled."

41710. PAEONIA SUFFRUTICOSA Andrews. Ranunculaceæ. **Tree peony.**
(*Paeonia moutan* Sims.)

"Seeds of the real wild mountain peony, which occurs in very inaccessible mountain valleys in Tibet proper, where white men are not allowed to go under ordinary circumstances. Ripens its seeds in the Chinese eighth moon (about September 15 to October 20)." (*Meyer.*)

41711. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Pummelo.**

From Amoy, China. Presented by Miss K. M. Talmage, at the request of Mrs. L. W. Kip. Received January 8, 1916.

"I got this back from the Haicheng." (*Talmage.*)

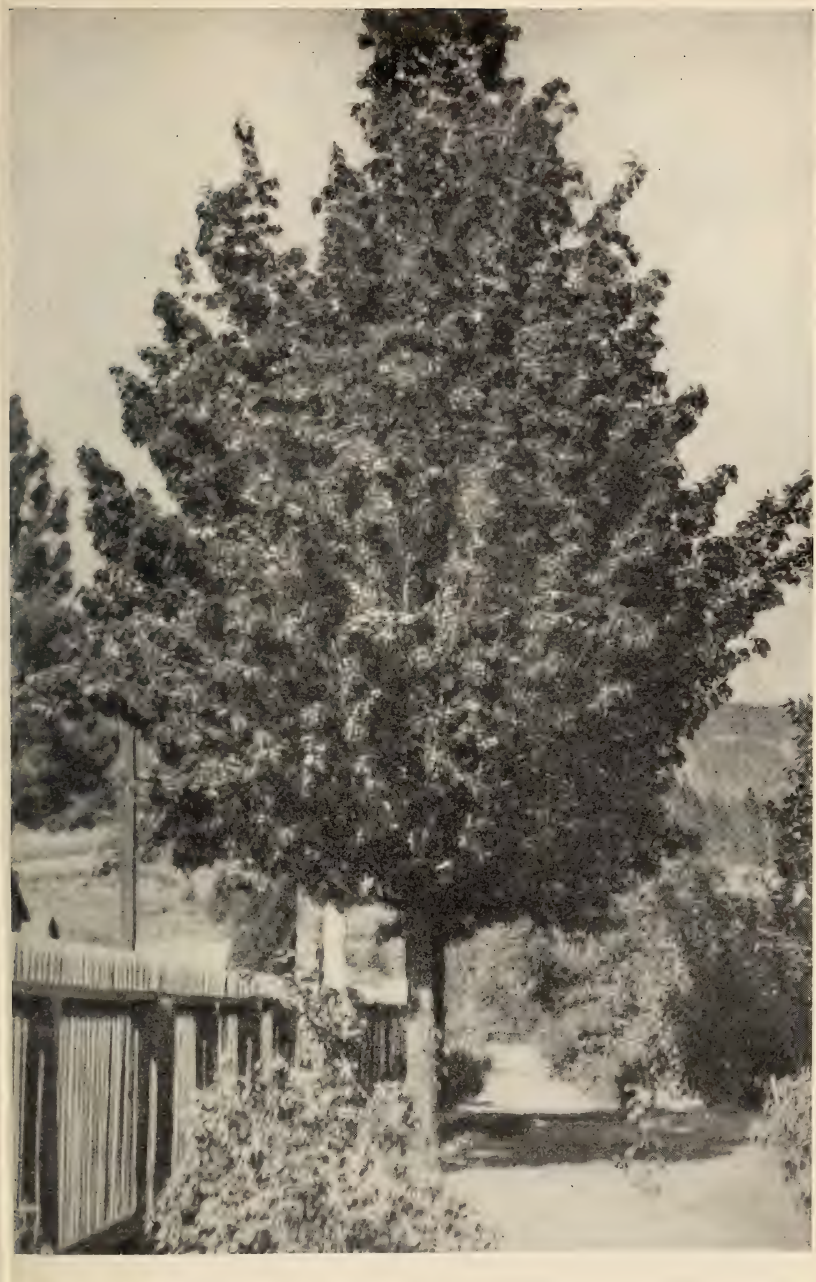
41712 to 41717.

From Lamao, Bataan, Philippine Islands. Presented by the Lamao Experiment Station. Received January 10, 1916.

41712. CACARA EROSA (L.) Kuntze. Fabaceæ. **Yam bean.**
(*Pachyrhizus angulatus* Rich.)

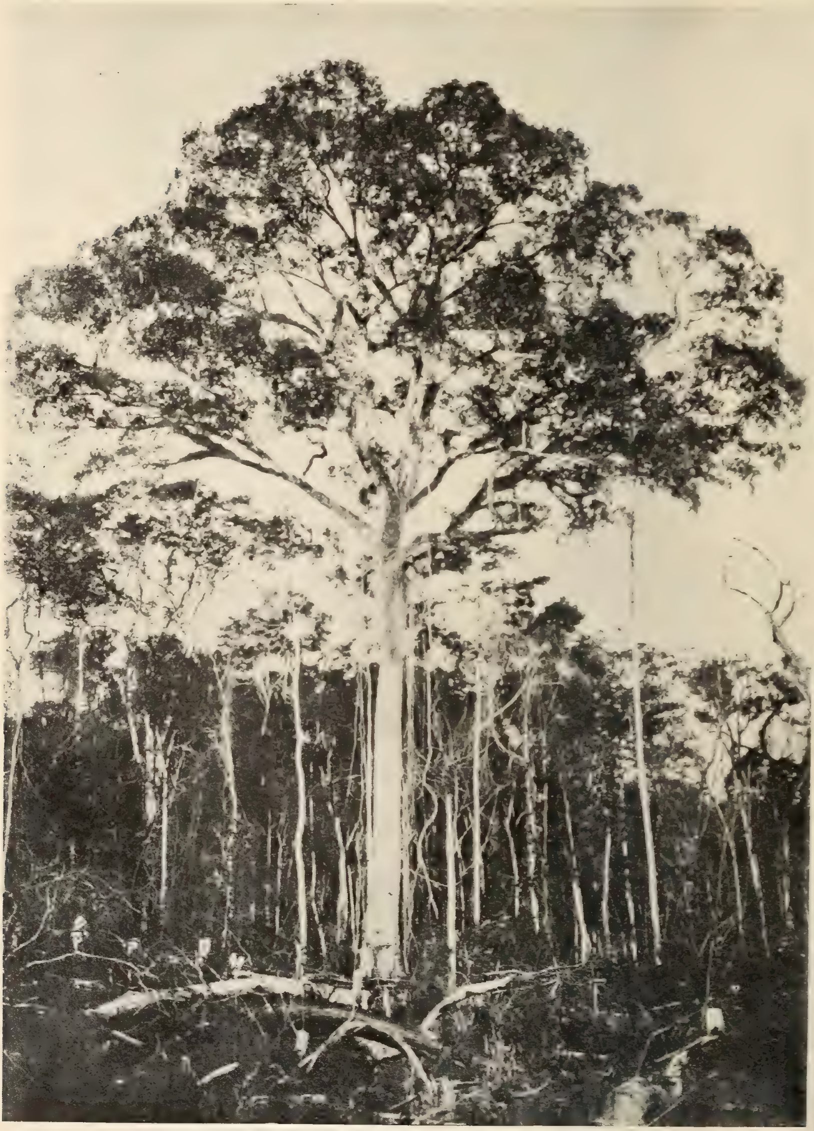
"*Sincamas* (wild)."

"The plant, which in both Guam and the Philippines bears its Mexican name, was probably brought [to Guam] from Mexico. The young root



THE SERVICE TREE, A NEGLECTED MEDITERRANEAN FRUIT TREE. (SORBUS DOMESTICA L. SEE S. P. I. NOS. 41703 AND 41804.)

In Italy the sorbo, as this fruit is called, is sold in large quantities by the fruit venders on the streets. Like the European medlar, it is good to eat only when overripe, and even then it has an astringent taste which some people find objectionable. In the old Italian works on agriculture at least six distinct varieties are recognized. They ripen their fruits in September and October, and after pickling these are stored in fruit houses or cellars until overripe. This illustration shows a young tree planted by the French nurseryman, Felix Gillet, in his Barren Hill Nursery, at Nevada City, Cal. From its behavior there it is believed to be capable of cultivation in many places in California. As a tree it is most attractive. (Photographed by David Fairchild, 1902; P1488FS.)



THE JEQUITIBA, A GIANT FOREST TREE OF BRAZIL. (CARINIANA LEGALIS (MART.) KUNTZE., S. P. I. NO. 41933.)

Although smaller than the sequoia, the giant eucalyptus, or the California redwood, this superb tree deserves to rank with them in magnificent proportions, because of its perfect columnar trunk, which rises like a Corinthian column and supports a magnificent crown of immense branches, each one of which is large enough to make a good-sized tree. Such a wonderful species as this should not be allowed to perish from the face of the earth, and plantings of it deserve to be attempted in our own tropical possessions. There are records of trees of this species which measure 130 feet in height. The jequitiba is related to the tree which bears Brazil nuts, but its nuts are not edible. (Photographed by Señor E. N. de Andrade, Rio Claro, Brazil, whose collections of Brazilian trees, and especially his extensive plantations of eucalyptus, have become world known.)

41712 to 41717—Continued.

is much like a turnip in shape and consistency and is easily peeled like a turnip. It is usually eaten raw and may be prepared with oil and vinegar in the form of a salad. According to Dr. Edward Palmer, it is extensively cultivated in Mexico, where the natives pinch off the blossoms and seed pods, giving as a reason that if the seeds are allowed to mature the roots are not good. In Mexico the roots are much eaten raw, but are also pickled, boiled in soup, and cooked as a vegetable. As they come from the ground they are crisp, sweet, juicy, and of a nutty flavor. They are nourishing and at the same time quench the thirst, so that they are much liked by travelers. One way of preparing the raw roots is to cut them in thin slices and sprinkle sugar over them. They may also be boiled and prepared with batter in the form of fritters, and in Mexico they are often minced or grated, and with the addition of sugar, milk, eggs, and a few fig leaves for flavoring made into puddings." (*Safford, Useful Plants of Guam, p. 204.*)

41713. Citrus aurantium L. Rutaceæ. Sour orange.

A small tree 6 to 9 meters in height, with a compact head, young shoots light green, thorny; leaves unifoliate, evergreen, alternate, ovate, pointed, strongly and peculiarly scented; petiole 12 to 18 millimeters long, broadly winged; flowers in small, axillary cymes, white, strongly sweet scented, somewhat larger than those of *Citrus sinensis;* fruit orange colored or frequently reddish when well matured, inclined to be rough; rind strongly aromatic, bitter; pulp acid; juice sacs spindle shaped, rather small; seeds flattened and wedged toward the micropylar end, marked with ridged lines. Native of southeastern Asia, probably in Cochin China. Hardier than the sweet orange. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 10,* under *Citrus vulgaris.*)

41714. Citrus excelsa Wester. Rutaceæ. Limon-real.

A tall, thorny shrub of vigorous growth, straggly habit, and interlocking branches with stout, long, sharp thorns; leaves 9.5 to 16 centimeters long, 4.5 to 7 centimeters wide, thick and leathery; petiole quite broadly winged, in large leaves the wings frequently exceeding 2 centimeters in width; flowers three to seven, in axillary, rather loose cymes, 36 millimeters in diameter; petals showing a trace of purple on the outside; fruit 5 to 7.3 centimeters, 5.5 to 7.5 centimeters in equatorial diameter, weight 115 to 225 grams; form subglobose; base rounded; apex flattened; surface smooth, greenish to clear lemon yellow; skin thin; pulp greenish to grayish, in good varieties very juicy, mildly acid, and of excellent flavor; juice cells long, slender, and pointed. Plant material of the *limon-real* has been collected in Tarlac, Bontoc, and Bohol, and the fruit is at rare intervals offered for sale in small quantities in Manila. The name of the plant, *royal lemon,* indicates the esteem in which the fruit is held by the people, and while it is unfortunately true that most of the fruits tested have been too dry to be of any value, yet in the best types the fruits surpass in quality and aroma all lemons and limes that the writer has had the opportunity to sample. Considering the robust, thorny growth, large leaves, and broad-winged petioles, together with the roundish oblate fruit with its 10 to 14 locules, and the flowers with 34 to 35 stamens, as against the 20 to 26 in the lime and lemon, this plant is apparently as distinct from these species as they are from each other. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 26.*)

41712 to 41717—Continued.

41715. CITRUS LIMETTA AROMATICA Wester. Rutaceæ.

A spiny shrub, with rather slender, willowy, drooping branches and sharp spines; young growth light green, of pleasant and distinct odor when bruised; leaves 7.5 to 10 centimeters long, 3.5 to 5 centimeters broad, dull green above; petioles 6 to 19 millimeters long with a narrow wing margin; flowers solitary or in cymes of four, terminal or axillary, 28 to 35 millimeters across; calyx rather large, petals four to five, white with a trace of purple on the outside; style not distinct, as in *Citrus aurantium*, but rather similar to that of *Citrus medica*; fruit 5 centimeters long, 4 to 4.5 centimeters across, roundish to roundish oblong; skin thin, smooth, lemon yellow, pulp pale green, juicy, sharply acid, sometimes almost bitter; juice cells long, slender, and pointed; seeds very numerous, small, and plump, polyembryonic. This form seems to be fairly well distributed, and material has been propagated at Lamao from such distinct points as Mindoro, Palawan, and Bangued. Unquestionably a lime, it is quite distinct from the ordinary lime in habit and in the aromatic tender foliage, in the purplish petaled flowers, which are larger than those of the lime, and in the greater number of stamens. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, pp. 25 and 26.*)

41716. CITRUS MEDICA L. Rutaceæ. **Citron.**

41717. CITRUS MEDICA ODORATA Wester. Rutaceæ.

Tihi-tihi. A small thorny shrub, seldom exceeding 2.5 meters in height, with sharp, stout spines; young growth bright green; leaves 7.5 to 11 centimeters long, 4.3 to 6.5 centimeters broad, elliptical, rather thick and leathery, serrate, of distinct fragrance; base rounded; apex notched; petioles very short, 4 to 6 millimeters long, not winged; flowers one to four in axillary compressed cymes, sessile, rarely exceeding 38 millimeters in diameter; petals four to five, fleshy, white, with a tinge of purple on the outside; fruit 60 to 65 millimeters long, 7 to 10 centimeters in transverse diameter, weighing 300 to 475 grams, oblate, with a shallow basal cavity, and sometimes a mammilate apex, more or less ridged longitudinally, fairly smooth, clear lemon yellow; lenticels scattered, depressed; oil cells large, equal or a trifle raised; skin rather thick; pulp grayish, rather dry, sharply acid, of lemon flavor; juice cells long and slender; seeds many, sometimes 125 in a single fruit, short, broad, and flattened. The *tihi-tihi* is a rare plant found in cultivation in Cebu and Bohol; one plant has been seen in Misamis, Mindanao. The plant is very precocious, fruiting as early as the third year from seed, everbearing, and the fruit is used by the Filipinos in washing the hair. It is not eaten and is of no commercial importance. The *tihi-tihi* differs from the citron in its green, tender, highly aromatic growth, the leaves having been found to contain 0.6 per cent essential oil, as analyzed by the Bureau of Science. The fruit is strikingly different from the citron. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, pp. 22 and 23.*)

41718 to 41721.

From Chungking, China. Presented by Mr. E. Widler. Received January 8, 1916. Quoted notes by Mr. Widler.

41718. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Orange.**

"Large orange. This orange grows plentifully in Szechwan, is about 11 inches in circumference, of very good flavor, contains a small number of seeds, has a very thin skin and practically no pith."

41718 to 41721—Continued.

4179. Citrus nobilis deliciosa (Ten.) Swingle. Rutaceæ. **Mandarin orange.**

"*Chü tzŭ.* Has no pith and is of very good flavor. The skin is dried and boiled and the infusion drunk as a medicine."

41720. Ficus lacor Buch.-Ham. Moraceæ.

"*Huang ko shu.* A tree 150 feet high, 12 feet in circumference, grows best among rocks in a subtropical climate. It takes about 15 to 20 years to mature in good soil; flowers white. It is used principally for shading purposes on the highroad and in the temples. It is of no commercial value. Seeds yellow, inclosed in a pod."

41721. Momordica charantia L. Cucurbitaceæ. **Balsam pear.**

"*K'u kua.* A creeping plant 10 feet or more, grows best in a climate of 70° to 90° F. It takes about two months to mature; bears white and yellow fruits in autumn. The fruit is about 1 foot long and 3 or 4 inches in circumference. It is used in soups and as a vegetable and is prepared by boiling. It sells in the market for about 20 cash each. Seeds yellow."

41722. Parmentiera cereifera Seem. Bignoniaceæ. **Candle tree.**

From Mayaguez, Porto Rico. Presented by Mr. C. F. Kinman, horticulturist, Agricultural Experiment Station. Received January 4, 1916.

A tropical American tree, with simple or trifoliate leaves, white flowers, and fleshy, cylindrical, yellow fruits, often 4 feet long, resembling wax candles and having a peculiar applelike odor. Cattle are sometimes fattened on these fruits. (Adapted from *Lindley, Treasury of Botany, vol. 2, p. 848.*)

See S. P. I. Nos. 26206 and 28674 for previous introductions.

41723. Diospyros ebenaster Retz. Diospyraceæ. **Black sapote.**

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. Received January 4, 1916.

"The *zapote prieto* or *zapote negro* (black sapote) of Mexico, an interesting fruit belonging to the persimmon family. The tree grows in compact, shapely form and is of very ornamental appearance with its oblong-oval glossy leaves about 4 inches long. In appearance the fruit greatly resembles some varieties of the kaki or Japanese persimmon; instead of being bright orange, however, they are light green when ripe, and measure 2½ to 3 or even 4 inches in diameter. In shape they are oblate or distinctly flattened, and the persistent light-green calyx is quite prominent. The interior of the fruit, when ripe, is anything but attractive in appearance, the flesh being dark brown or almost black in color and of a greasy consistency. The flavor is sweet, but rather lacking in character; for this reason the Mexicans frequently serve the fruit cut up, or mashed up, with orange juice; it is a first-rate dish. The seeds look like those of the persimmon and are not very numerous." (*Wilson Popenoe.*)

See S. P. I. Nos. 39719, 40338, and 41568 for previous introductions.

41724. Abelmoschus esculentus (L.) Moench. Malvaceæ. **Okra.**
(*Hibiscus esculentus* L.)

From Athens, Greece. Presented by the director of the Royal Agricultural Society. Received January 11, 1916.

"A half-hardy plant introduced into the United States and West Indies from Africa and cultivated for its fruit pods, which are used in soups, stews, catsups, and the like. In soups and catsups it gives body to the dish; stewed it is mucilaginous, and while at first not agreeable to many persons a taste for it is easily acquired. It is also dried and canned for winter use. When ripe the black or brown white-eyed globular seeds are sometimes roasted and used as a coffee substitute." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2332.*)

41725. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Altadena, Cal. Purchased from Mr. F. O. Popenoe, West India Gardens. Received January 12, 1916.

Seeds of a hardy type of avocado, purchased for fumigation experiments.

41726. ARBUTUS ARIZONICA (A. Gray) Sarg. Ericaceæ. **Madroña.**

From the Santa Rita Mountains, Arizona. Collected by Dr. David Griffiths, of the Bureau of Plant Industry. Received January 12, 1916.

"This is a tree commonly a meter in circumference and 10 meters high, but often much larger. The old trunks have a bright, light-gray bark and the branches are light osier red. The contrast with the permanent light-green leaves and coral-red berries is very striking. To my mind this is one of the most ornamental of native southwestern trees and should be propagated and widely distributed. Indeed, the whole group of manzanita-arctostaphylos arbutus trees and shrubs are very ornamental broad-leaved evergreens, and our native ones are all but unknown in the trade. It is going to take some careful experimentation to make them ready for handling, but they will probably be found to be no more difficult than the rhododendrons. We need to know how best to propagate them. Some of the manzanitas are easily transplanted, and probably the closely related plants may also be handled in the same way, but trees small enough are not numerous in parts where I have traveled. They are said to grow from hardwood cuttings with difficulty. The trees are usually found under typical forest conditions where the floor is covered with a great deal of débris. They probably require an acid soil. This particular lot of seed comes from an altitude of 6,000 to 7,000 feet in the Santa Rita Mountains, Ariz., where snows are frequent and I judge temperatures must often touch the zero mark. I suggest, since the quantity of seed is small, that the germination be tried under greenhouse conditions. This is transmitted for propagation at Chico, Cal." (*Griffiths.*)

41727. AMYGDALUS PERSICA PLATYCARPA (Decaisne) Ricker. Amygdalaceæ. **Peach.**
(*Prunus persica platycarpa* Bailey.)

From Brisbane, Queensland, Australia. Presented by Mr. J. F. Bailey, director, Botanic Gardens. Received January 12, 1916.

"*Flat China* peach, or *Peen-to*."

41728. CANNABIS SATIVA L. Moraceæ. **Hemp.**

From Keijo, Chosen (Korea). Presented by Mr. Kosuke Honda, director, Agricultural and Industrial Model Station, through Mr. Lyster H. Dewey, of the Bureau of Plant Industry. Received January 12, 1916.

"Seed of the 1914 crop grown at this station."

41729. PYRUS SALICIFOLIA Pall. Malaceæ. **Willow-leaved pear.**

From the Caucasus. Presented by Mr. Theodore Kryshtofovich, Russian Government Agricultural Commissioner. Received January 12, 1916.

"It is the most ornamental of all true pears. Its leaves and flowers often open simultaneously, and it then presents a very charming picture, the willow-like leaves being of a conspicuous silky white." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 292.*)

See S. P. I. No. 40497 for previous introduction.

41730. VACCINIUM OVATUM Pursh. Vacciniaceæ. **Huckleberry.**

From Ucluelet, Vancouver Island, B. C. Collected by Mr. David Fairchild, of the Bureau of Plant Industry. Received January 12, 1916.

An evergreen shrub of bushy habit, 10 to 12 feet high in England. Leaves small, of firm leathery texture, dark glossy green above, paler beneath, nearly smooth. Flowers produced in September, four to six together in short, nodding racemes from the leaf axils, white, roundish, bell shaped; berry black. Native of western North America. While hardy enough to survive the hardest winters experienced at Kew, it often suffers in severe frost through the cutting back of the younger growth. At Bearwood, in Berkshire, there is a specimen 10 to 12 feet high, which is one of the finest in the country. It is a handsome bush when seen at its best. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 628.*)

41731 to 41743.

From India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens, Seharunpur. Received January 12, 1916. Descriptive notes by Mr. Hartless.

41731 to 41736. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

41731. "Mixed. From Quetta."

41732. "White *Kashmiri*. From Kashmir. Ripens about two weeks after the early variety *Silver* peach [S. P. I. No. 41734]. An indigenous variety, pulp sweet, but the fruit is somewhat smaller than *Large Red*. It is grown from seed."

41733. "*Seharunpur* or *Country*. From Seharunpur. Similar to *Hardoi* [S. P. I. No. 41738] and *Large Agra* [S. P. I. No. 41740], varying according to the localities in which they are grown."

41734. "*Silver* peach. From Kashmir. Early variety. White skin; large fruit, sweet in taste. A grafted foreign variety."

41735. "*Large Red*. From Kashmir. Ripens two weeks after *Large Red* [S. P. I. No. 41736]. The skin and pulp are both red. Commonly known as *Seharunpur*. Grafted."

41736. "*Large Red*. From Kashmir. The skin and pulp are both red. Early variety. Commonly known as *Seharunpur*."

41737. AMYGDALUS PERSICA PLATYCARPA (Decaisne) Ricker. Amygdalaceæ. **Peach.**
(*Prunus persica platycarpa* Bailey.)

"*Flat China* peach, or *Peen-to*. From Seharunpur. A peculiar Chinese variety, very hardy and of fair quality."

41731 to 41743—Continued.

41738. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"*Hardoi.* From Seharunpur. Similar to *Seharunpur* or *Country* [S. P. I. No. 41733] and *Large Agra* [S. P. I. No. 41740], varying according to the localities in which they are grown."

41739. AMYGDALUS PERSICA NECTARINA Ait. Amygdalaceæ. **Nectarine.**

"A nectarine from Kashmir. A French variety; grafted, late."

41740 to 41743. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

41740. "*Large Agra.* From Seharunpur. Similar to *Seharunpur* or *Country* [S. P. I. No. 41733] and *Hardoi* [S. P. I. No. 41738], varying according to the localities in which they are grown."

41741. "Small white *Kashmiri.* From Kashmir. Indigenous late variety grown from seed. Not much taste, though sweet."

41742. "Small red *Kashmiri.* From Kashmir. Indigenous late variety; ripens last of all. Grown from seed."

41743. "*Mai-Cha.* From Seharunpur. A Chinese variety. One of the first to come into bearing; it remains long on the trees."

41744 to 41762. Poaceæ. Grass.

Procured by Mr. Roland McKee, of the Bureau of Plant Industry, from the Australian exhibit of the Panama-Pacific Exposition, San Francisco, Cal. Received January 14, 1916. Descriptive notes by Mr. McKee except where otherwise indicated.

41744. CHAETOCHLOA MACROSTACHYA (H. B. K.) Scribner and Merr.
(*Setaria macrostachya* H. B. K.)

"Grows 4 feet tall, leafy, shatters easily. A good fodder."

41745. MANISURIS COMPRESSA (L. f.) Kuntze.
(*Rottboellia compressa* L. f.)

"For swamp lands and margins of rivers; 5 feet tall, leafy, coarse; fair seed habit."

41746. PANICUM DISTACHYON L.

"Excellent pasture and hay grass; 2½ feet tall, leafy; fine seed habits for a Panicum."

"The stems of this grass creep and root at the joints; it is an immense yielder and is grown for hay in the northern districts. This is one of several indigenous grasses tested at Gracemere, near Rockhampton, and considered best for the purpose of haymaking." (*Maiden, Useful Native Plants of Australia, p. 98.*)

41747. ARUNDINELLA NEPALENSIS Trin.

"Grows 5 feet tall, erect, fairly leafy; good seed habit; wants tropical climate and good soil."

41748. THEMEDA GIGANTEA AVENACEA (F. Muell.) Hack.
(*Anthistiria avenacea* F. Muell.) **Kangaroo grass.**

"A good fodder grass, 6 feet tall, rather coarse, medium leafy; fair seed habit. Tall oat-grass of the downs country."

"In parts it is one of the most productive grasses in Australia, and (unlike other kangaroo grasses) it possesses the advantage of being a

41744 to 41762—Continued.

prolific seeder. It is nutritious and perennial and produces a large amount of bottom fodder. It seeds in November and December, is peculiar to the back country, and is found only on the richest soil, only in a few places, and there over a limited area. It grows in small detached tussocks; the leaves or blades are eaten by stock, but the seed stalks are left standing. All of the colonies except Tasmania." (*Maiden, Useful Native Plants of Australia, p. 74,* under *Anthistiria avenacea.*)

41749. ISCHAEMUM AUSTRALE VILLOSUM (R. Br.) Hack.

"Grows 5 feet tall, leafy to top; good seed habit; found on swampy land."

41750. HOMALOCENCHRUS HEXANDRUS (Swartz) Kuntze. Rice-grass.
(*Leersia hexandra* Swartz.)

"Grows 3 to 3½ feet tall, very leafy; liked by cattle; found on swampy land; poor seed habit."

41751. ALLOTEROPSIS SEMIALATA (R. Br.) Hitchc. Cockatoo grass.
(*Panicum semialatum* R. Br.)

"*Cockatoo* grass; excellent pasturage; 2 to 3 feet tall, leafy at base; good seed habit. *Lo-thi* of Batavia River natives."

41752. DANTHONIA PALLIDA R. Br. Silver grass.

"White-topped grass; good pasturage; 2 feet tall."

41753. PANICUM FOLIOSUM R. Br.

"Handsome broad-leaved grass found usually on broken land; of straggling habit, 2½ feet tall; leafy; fair seed habit."

41754. POLLINIA FULVA (R. Br.) Benth. Sugar grass.
(*Pollinia cumingii* Nees.)

"*Brown-top.* Considered by stock owners to equal the Mitchell grass as a drought resister; on account of its sweetness is often called sugar grass; 3 feet tall; leafy, fine stems; good seed habit."

41755. HOLCUS FULVUS R. Br.
(*Andropogon serratus* Thunb.)

"Excellent fodder; 5 feet tall."

41756. HOLCUS PLUMOSUS R. Br.
(*Andropogon australis* Spreng.)

"Grass not liked by sheep farmers, but for cattle run it is a very good grass; 2½ feet tall; leafy fine stems; shatters seeds freely."

41757. THEMEDA FORSKALII Hack. Kangaroo grass.
(*Anthistiria vulgaris* Hack.)

"Common form of kangaroo grass. There are several forms of this species, but all are equally good fodder grasses; 3 feet tall; fine stems; medium leafy; fair seed habit."

41758. ARISTIDA CALYCINA R. Br.

"Good only when young; 2½ feet tall; fine stems."

41759. CHLORIS PARAGUAIENSIS Steud.

"An excellent fodder; one of the best grasses for pasturage and hay; 3 feet tall, about like Rhodes grass. Less common than *Chloris virgata.*"

41760. CHLORIS VENTRICOSA R. Br.

"*Blue star* grass. Good pasturage; probably the long-awned form of Bentham, in Flora Australiensis; 2 feet tall; very fine stems."

41744 to 41762—Continued.

41761. CHLORIS VENTRICOSA TENUIS Benth.

"A good pasture plant, also used for hay; 3 feet tall, fine stems, medium leafy; poor seed habit."

41762. ANDROPOGON ISCHAEMUM L.

"Produces a large quantity of coarse feed; 3 to 4 feet tall, leafy; fair seed habit."

41763 to 41769.

From Salt Lake City, Utah. Presented by Mr. Ben Johnson, Utah Rare Plant Company. Collected in the Great Basin region. Received January 20, 1916.

41763. ARCTOMECON HUMILE Coville. Papaveraceæ. **Poppy.**

A small but handsome poppy, with somewhat hairy, long, wedge-shaped leaves and clusters of large white flowers.

41764. BERBERIS FREMONTII Torr. Berberidaceæ. **Barberry.**

A shrub 10 to 20 feet high with rigid, thick leaves, two or three pairs of leaflets, the lowermost spiny, racemes of yellow flowers, and dark-blue berries about the size of currants.

See S. P. I. Nos. 12242 and 28713 for previous introductions.

41765. BERBERIS REPENS Lindl. Berberidaceæ. **Barberry.**

A low shrub less than a foot high with bright-green leaves composed of three to seven leaflets and few terminal racemes of yellow flowers which produce attractive clusters of dark-blue berries.

41766. DELPHINIUM SCAPOSUM Greene. Ranunculaceæ. **Larkspur.**

A handsome larkspur with leafless flowering stems, rather thick, 3-parted, radical leaves, and terminal racemes of beautiful deep-blue flowers.

41767. ECHINOCACTUS LECONTEI Engelm. Cactaceæ. **Cactus.**

Large, ovate cylindrical cactus, often 5 feet high and 2 feet in diameter, with spines up to 2½ inches long, rather fleshy yellow flowers, and yellow fruits 2 to 2½ inches long.

41768. GERANIUM FREMONTII Torr. Geraniaceæ. **Crane's-bill.**

Diffuse plant 2 feet high with 3 to 7 parted, pubescent leaves, and clusters of light-purple flowers an inch or more across.

41769. HEDYSARUM PABULARE A. Nelson. Fabaceæ.

Perennial herb, with slender, drooping stems, compound leaves, and long racemes of attractive lilac or pale purplish flowers.

41770. VICIA FABA L. Fabaceæ. **Broad bean.**

From New Haven, Conn. Presented by Mr. Junzo Kishi. Received January 26, 1916.

"Japanese *sora mame* (sora beans)." (*Kishi.*)

41771 to 41775.

From Salt Lake City, Utah. Presented by Mr. Ben Johnson, Utah Rare Plant Company. Collected in the Great Basin region. Received January 20, 1916.

41771 to 41775—Continued.

41771. PAROSELA JOHNSONI (S. Wats.) Vail. Fabaceæ.
(*Dalea johnsoni* S. Wats.)

Diffusely branched shrub with smooth, gray bark, leaves 1 to 2 feet long, composed of 5 to 11 leaflets and loose racemes of deep-purple flowers terminating the leafy branchlets.

41772. PENTSTEMON PALMERI A. Gray. Scrophulariaceæ. **Beard-tongue.**

A very attractive species 1½ feet high, with narrow strap-shaped leaves and panicles of pale-purple flowers.

41773. PENTSTEMON UTAHENSIS Eastw. Scrophulariaceæ. **Beard-tongue.**

A beautiful and showy plant 1 to 2 feet high, with glaucous foliage and velvety carmine flowers.

41774. SALAZARIA MEXICANA Torr. Menthaceæ.

A shrubby plant 2 to 3 feet high, with soft hairy branches crowned with short racemes of purplish flowers. Leaves small, oblong.

41775. YUCCA ANGUSTISSIMA Engelm. Liliaceæ.

A very narrow-leaved species. Stemless; leaves three-fourths to 2 inches wide, white bordered; inflorescence 3 to 5 feet high; flowers bell shaped, pure white.

41776 to 41778. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

From Sibpur, near Calcutta, India. Presented by Mr. C. C. Calder, curator, Royal Botanic Gardens, at the request of Mr. A. C. Hartless, superintendent, Government Botanic Gardens, Seharunpur, India. Received January 26, 1916.

41776. "No. 1. Common walnut."

41777. "No. 2. The large-leaved, large-seeded walnut. The tree of this kind is more spreading than the common kind and not so lofty. It attains a very large size (bulk)." (*Calder.*)

41778. "No. 3. The endocarp of this has three valves instead of two, as in the common species. The tree, though lofty, appears to be of more slender habit than either of the others." (*Calder.*)

41779 to 41793. DIOSPYROS KAKI L. f. Diospyraceæ. **Kaki.**

From Okitsu, Japan. Cuttings presented by Prof. Ishiwara, Government Horticultural Experiment Station. Received January 22, 1916. Descriptive notes by Mr. T. Kiyono, Semmes, Ala.

41779. "No. 13. *Chijo.* Astringent. Kagoshima Province."

41780. "No. 14. *Moriya.* Astringent. Kagoshima Province."

41781. "No. 15. *Niyorodo.* Sweet. Fukushima Province."

41782. "No. 16. *Oranda-gosho.* Sweet. Fukushima Province."

41783. "No. 17. *Manzu-gaki.* Sweet. Fukushima Province."

41784. "No. 18. *Shyozaemon.* Astringent. Fukushima Province."

41785. "No. 19. *Yotsumimi.* Astringent. Tomiyama Province."

41786. "No. 20. *Mompei.* Astringent. Tomiyama Province."

41787. "No. 21. *Hana-gosho.* Sweet. Tottori Province."

41788. "No. 22. *Yoroi-odoshi.* Astringent. Miyagi Province."

41789. "No. 23. *Gobangaki.* Astringent. Kanagawa Province."

41779 to 41793—Continued.

41790. "No. 24. *Sakata.* Sweet. Niligata Province."

41791. "No. 25. *Jisha.* Astringent. Niligata Province."

41792. "No. 26. *Handai.* Astringent. Gunba Province."

41793. "No. 27. *Rendaiji-hiragaki.* Sweet. Miye Province."

41794 to 41799. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Kingston, Jamaica. Presented by Mr. W. Harris, Department of Agriculture. Received January 24, 1916. Notes by Mr. Harris.

41794. "Hairy, or spring, green chayote or chocho."

41795. "Large green chayote or chocho."

41796. "Round white chayote or chocho."

41797. "Small green chayote or chocho."

41798. "Long white chayote or chocho."

41799. "Ordinary green chayote or chocho."

41800 and 41801. CHAYOTA EDULIS Jacq. Cucurbitaceæ.
(*Sechium edule* Swartz.) **Chayote.**

From Adjuntas, Porto Rico. Presented by Mr. Bartholomé Barceló. Received January 23, 1916. Quoted notes by Mr. Barceló.

"These varieties produce well in this country on the borders of ravines, in cool places, as in pits, and they are best produced in cool places which have a stream of water. In such places they yield abundantly. The white variety is more appreciated than the green. Here they are used for salads, and the country people also feed them to pigs."

41800. "Large white." 41801. "Large green."

41802. GARCINIA MESTONI F. M. Bailey. Clusiaceæ.
Meston's garcinia.

From Cairns, Queensland, Australia. Cuttings presented by Mr. G. Williams, Department of Agriculture and Stock. Received January 31, 1916.

An erect, slender, graceful tree 20 feet or more high, with drooping branches, opposite, narrowly lanceolate, glossy, dark-green leaves, white flowers, and globular fruits possessing a sharp, pleasant, acid flavor. (Adapted from *Bailey, A Synopsis of the Queensland Flora, third supplement, 1890.*)

41803 and 41804.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received January 31, 1916.

41803. MESPILUS GERMANICA L. Malaceæ. Medlar.
(*Pyrus germanica* Hook. f.)

"Growing wild here in the mountains. The fruits when soft [mellow] give perhaps the best juice which exists. It has an exquisite aroma, somewhat like vanilla." (*Proschowsky.*)

"A low deciduous tree of crooked, picturesque habit, usually under 20 feet high. Leaves almost without stalks, 2 to 5 inches long. Flowers solitary at the end of short leafy branches; about 1 inch across, white

41803 and 41804—Continued.

or slightly pink, produced in May or early June. Fruit apple shaped, brown. This wild medlar is a native of Europe and Asia Minor and is found wild in the woods of several counties in the south of England, but it is not believed to be truly indigenous. It has long been cultivated for its fruit in English orchards, and several named varieties exist. Although much esteemed by those who have acquired a taste for them, medlars are not a popular fruit. They should be left on the trees until the end of October or later, then stored in a fruit room until they are 'bletted,' a term given to indicate a state of incipient decay. A jelly made from the fruits meets a more general taste. It is very hardy, and not particular as to soil." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 81.*)

41804. SORBUS DOMESTICA L. Malaceæ. **Service tree.**
(*Pyrus sorbus* Gaertn.)

"Wild here; very good when soft." (*Proschowsky.*)

See S. P. I. No. 41703 for previous introduction and description.

41805 to 41807. ANNONA CHERIMOLA Mill. Annonaceæ.

Cherimoya.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received January 28, 1916.

41805. "No. 1. Very good variety."

41806. "No. 2. Very good variety."

41807. "No. 3. In my opinion, this is the best variety we have in Costa Rica." (*Wercklé.*)

41808. MACADAMIA TERNIFOLIA F. Muell. Protaceæ.

Queensland nut.

From Honolulu, Hawaii. Presented by Mr. C. S. Judd, Board of Commissioners of Agriculture and Forestry. Received January 31, 1916.

"These nuts grew in Honolulu on trees introduced from either Queensland or New South Wales, Australia, about 30 years ago. The fruit on these trees ripens almost throughout the year. Younger trees of this species in Honolulu begin to bear at eight years from planting, and they are readily started from the nuts. The leaf of the tree, which seldom attains a height of more than 30 feet in these islands, is a dark green, very shiny, and resembles the leaf of the eastern chestnut oak. There are only a few bearing trees in Honolulu. The nuts from these are roasted in the same manner as salted almonds and are used on the table for the same purpose. They are crisp and tender and in my opinion far excel salted almonds." (*Judd.*)

41809. MIMUSOPS ELENGI L. Sapotaceæ.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received January 31, 1916.

"The fruit of this species is edible and commonly eaten by young boys, but is sweet and insipid. Being a forest tree the seed should be sown in nurseries and young plants planted in a definite place under cover of some shady shrub while young. They must not be planted directly in open ground." (*Regnard.*)

41810. Randia aculeata L. Rubiaceæ. **Inkberry.**

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received January 31, 1916.

"A beautiful, very small-leaved shrub; a very fine hedge plant for cold highlands." (*Wercklé.*)

"A shrub or small tree, widely distributed in the West Indies. It yields a blue dye, and the wood is used for minor purposes when toughness is required." (*Cook and Collins, Economic Plants of Porto Rico, Contributions from the National Herbarium, vol. 8, p. 228.*)

41811. Linum usitatissimum L. Linaceæ. **Flax.**

From Lawton, Queensland, Australia. Presented by Mr. Reginald W. Peters, director, Experiment Grounds, at the request of Mr. Leslie Gordon Corrie, Brisbane, Australia. Received February 2, 1916.

"This seed is the result of several years' hybridization and selection in England for length of unbranched fiber and absence of tillers at base." (*Peters.*)

41812 to 41815.

From Darjiling, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. Received February 2, 1916.

41812. Corylus ferox Wall. Betulaceæ. **Hazel.**

"This is a small tree, native of Nepal and Sikkim, found growing at altitudes ranging from 8,000 to 10,000 feet. The fruit, which has an edible kernel, is covered with a prickly cup. The wood is pinkish white in color, moderately hard and even grained." (*Watt, Dictionary of the Economic Products of India, vol. 2, p. 575.*)

See S. P. I. No. 39106 for previous introduction.

41813. Laurocerasus acuminata (Wall.) Roemer. Amygdalaceæ. (*Prunus acuminata* Hook. f.) **Laurel cherry.**

A laurel cherry from the eastern Himalayas and Assam, at elevations of 4,000 to 7,000 feet, with thin dark bark and reddish brown wood.

See S. P. I. No. 39121 for previous introduction.

41814. Michelia cathcartii Hook. f. and Thoms. Magnoliaceæ.

"This is a large tree which is found in the temperate forests of the Sikkim Himalayas at altitudes of 5,000 to 6,000 feet. The sapwood is large and white in color, while the heartwood is a dark olive brown and moderately hard. The wood of this species is used for planking and would do well for tea boxes." (*Watt, Dictionary of the Economic Products of India, vol. 5, p. 241.*)

41815. Styrax hookeri C. B. Clarke. Styracaceæ.

"This is a small tree frequently met with in Sikkim and Bhutan at altitudes between 6,000 and 7,000 feet. The wood is white, close grained, and moderately hard." (*Watt, Dictionary of the Economic Products of India, vol. 6, pt. 3, p. 385.*)

See S. P. I. No. 39137 for previous introduction.

41816. Canavali obtusifolium (Lam.) DC. Fabaceæ.

From Baixa Verde, Rio Grande do Norte, Brazil. Presented by Mr. E. C. Green, superintendent, Serviço do Algodão, Ministerio da Agricultura, Rio de Janeiro.

"Legume, growing over a cactus tree 25 feet high and aiding in its destruction; on very dry sandy soil." (*Green.*)

41817 to 41870. PRUNUS SERRULATA Lindl. Amygdalaceæ.
Flowering cherry.

"A collection of scions of 54 named varieties of Japanese flowering cherries, presented by the municipality of Tokyo to the American Government. These scions were cut from authentic trees growing in the famous Arakawa flowering-cherry collection maintained by the Tokyo municipality, which collection, in the opinion of such a noted authority on the subject as Mr. S. Funatsu, contains some of the loveliest forms of these remarkable flowering trees.

"This collection duplicates one which was secured by Mr. E. H. Wilson, of the Arnold Arboretum, in January, 1915 (see S. P. I. Nos. 39743 to 39798 and 39820 to 39826), many of which we were not successful in propagating.

"The arrangements to secure these scions were made by Mr. Frank N. Meyer, agricultural explorer of this office, during his stay in Japan in September, 1915; and Mr. H. Suzuki, manager of the Yokohama Nursery Company, very kindly superintended the collection and shipment of them to this country. Thanks are due to Mr. Post Wheeler, Chargé d'Affaires of the American Embassy in Tokyo, for conducting the arrangements with the Tokyo authorities.

"Mr. Wilson collected flowering botanical specimens from the Arakawa collection, and these are now in the herbarium of the Arnold Arboretum and will be of assistance in checking up the varietal nomenclature, which is much complicated. Several recent works have appeared dealing with the systematic classification of these Japanese flowering or mountain cherries, most important of which are: Sargent, Plantae Wilsonianae (Prunus by E. Koehne), volume 1, Part II, April 30, 1912; G. Koidzumi, Conspectus Rosacearum Japonicarum, Journal of the College of Science, Tokyo, 1913; M. Miyoshi, Japanische Bergkirschen, ihre Wildformen und Kulturrassen, Journal of the College of Science, Tokyo, March 20, 1916; E. H. Wilson, The Cherries of Japan, Arnold Arboretum, Publication No. 7, March 30, 1916.

"It is evident that radical changes in the botany of the Japanese cherries are coming. Probably some of the varieties included in this collection are classed by Miyoshi as belonging to his species *Prunus mutabilis*, but as yet the nomenclature of the varieties is so confused as to make it inadvisable here to attempt to classify them from their names alone.

"The hardiness of these flowering cherries in many parts of the United States, the fact that they flower at the most bewitching time of the year—April and May—and are peculiarly attractive for small gardens and yards, and that most of them are introduced for the first time into this country make the presentation of this valuable collection by the mayor of Tokyo and his associates a matter of very unusual interest to Americans." (*Fairchild.*)

41817. "*Fukurokuju.*"
41818. "*Kirin.*"
41819. "*Giozanoma-nioi.*"
41820. "*Sumizome.*"
41821. "*Meigetsu.*"
41822. "*Kwanzan.*"
41823. "*Shujaku.*"
41824. "*Taki-nioi.*"
41825. "*Shōgetsu.*"
41826. "*Washi-no-o* [*Washino-wo*]."
41827. "*Kan-zakura.*"
41828. "*Minakani.*"
41829. "*Kokonoye.*"
41830. "*Murasakizakura.*"
41831. "*Senrikō.*"
41832. "*Ranzan.*"
41833. "*Hatazakura.*"
41834. "*Chōshu-hizakura.*"
41835. "*Koshio-yama.*"
41836. "*Narazakura.*"
41837. "*Shirotae.*"
41838. "*Ichiyō.*"

41817 to 41870—Continued.

41839. "*Ōjōchin.*"
41840. "*Yae-akebono.*"
41841. "*Gyoikō.*"
41842. "*Kongōsan.*"
41843. "*Ariyake.*"
41844. "*Ohsibyama.*"
41845. "*Bendono* or *Benden.*"
41846. "*Yedozakura.*"
41847. "*Hōrinji.*"
41848. "*Shirofugen.*"
41849. "*Goshozakura.*"
41850. "*Amanogawa.*"
41851. "*Gijozakura.*"
41852. "*Amayadori.*"
41853. "*Hakkasan* [*Hakukazan*]."
41854. "*Ruiran.*"
41855. "*Ōshima-zakura.*"
41856. "*Hitoye-Fudanzakura.*"
41857. "*Jo-gioi-kō.*"
41858. "*Beni-tora-no-o.*"
41859. "*Koke-shimidsu.*"
41860. "*Asagi-zakura.*"
41861. "*Botanzakura.*"
41862. "*Surugadai-nioi.*"
41863. "*Somei-yoshino.*"
41864. "*Fugenzo.*"
41865. "*Mikurumagaeshi* [*kaisi*]."
41866. "*Jō-nioi.*"
41867. "*Taizan-fukun.*"
41868. "*Shirayuki.*"
41869. "*Higurashi.*"
41870. "*Unju-zakura.*"

41871. TRACHYCARPUS TAKIL Beccari. Phœnicaceæ. **Palm.**

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens. Received February 1, 1916.

"A palm from Mount Takil, Himalayas, closely related to *Trachycarpus martiana.*" (*Hartless.*)

41872. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor bean.**

From Tegucigalpa, Honduras. Presented by Mr. Edward W. Perry. Received February 4, 1916.

Seed small, gray, mottled with chocolate brown.

41873. ANNONA SQUAMOSA L. Annonaceæ. **Sugar-apple.**

From Chiengrai, Siam. Presented by Dr. W. T. Lyon, Overbrook Hospital and Dispensary. Received February 8, 1916.

"Seeds of a small fruit. It is very delicious but rather full of seeds. It has a close cousin in the oxheart, which is not grown here." (*Lyon.*)

41874 to 41877.

From Shanghai, China. Presented by Mrs. A. Anderson, through Mr. Frank N. Meyer, of the Bureau of Plant Industry. Received January 31, 1916.

41874. ACONITUM sp. Ranunculaceæ. **Aconite.**

A hardy ornamental perennial herb of value in masses or borders for its showy flowers and attractive foliage.

41875. PORANA RACEMOSA Roxb. Convolvulaceæ. **Snow creeper.**

A large twining annual herb, forming dense masses of white flowers, which, from its resemblance to snow in the jungle, is called "snow creeper" in India, where it is native. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2765.*)

41874 to 41877—Continued.

41876. PAEDERIA FOETIDA L. Rubiaceæ.

A glabrous pink-flowered vine, the leaves of which when crushed give off a strong odor of hydrogen bisulphid. It has become a troublesome weed among the bamboos at the Brooksville (Fla.) Field Station.

41877. VITIS DAVIDII Foex. Vitaceæ. Grape.

"A luxuriant, deciduous climber, the young shoots not downy, but covered with spiny, gland-tipped, somewhat hooked bristles, which give them a very rough appearance. Leaves heart shaped, slender pointed, toothed; 4 to 10 inches long, shining dark green and smooth above; bluish or greyish green beneath. Fruit said to be about two-thirds inch in diameter, black, and of a pleasant flavor. Native of central China; introduced by Wilson for Messrs. Veitch in 1900, but if, as I believe, the vine called *Spinovitis davidii* is the same, it has been cultivated in France and in England since about 1885." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 667*, under *V. armata*.)

41878 and 41879.

From Chungking, China. Presented by Mr. E. Widler. Received February 5, 1916.

41878. BOEHMERIA NIVEA (L.) Gaud. Urticaceæ. **Ramie.**

"*Ch'u ma.* This plant has a stem 5 to 6 feet high and 1 inch in circumference; the long-stalked leaves are ovate in shape with serrate margin; the under surface is covered with a downy substance and has a silvery appearance. The plant matures in about four months and bears in August. China grass is obtained from the stems of *Boehrmeria nivea* and ramie fiber, or rhea, from the stems of a variety of this plant. Both plants, which belong to the stinging-nettle family, have somewhat the habit of the gigantic stinging nettle, but *B. nivea* flourishes in temperate countries and is characterized by the white undersurface of its leaves, while, on the other hand, *B. nivea* var. *tenacissima* requires a more or less tropical climate for its best development and has the under surface of its leaves green. The term *ramie*, however, is applied in commerce to the product of both plants. The local market value for a sample of fiber is 300 cash per cattie. It is used principally for rope, cloth, and famous grass cloth." (*Widler.*)

"I think that according to the best usage at the present time the plant *Boehmeria nivea* may be called *ramie*. The bark, with the fiber stripped from the ramie plant and dried, without much cleaning, is designated *ramie ribbon;* the cleaned fiber, as it is commonly prepared in China by scraping the bark, is called *China grass;* and the fiber prepared from this grass by degumming and combing is called *ramie filasse.* The long fiber combed out is known as *ramie tops*, and the short tangled fiber combed out in preparing the tops is *ramie noils.*" (*L. H. Dewey.*)

41879. CROTON TIGLIUM L. Euphorbiaceæ. Croton-oil plant.

"*Pa tou.* The first Chinese character composing this name refers to a country which was included within the boundaries of the present eastern Szechwan. It is a few days' journey from Chungking, on a small river. The second character was used because of the resemblance to the soy bean. This plant grows to a height of about 30 feet, 3 feet in circumference. It bears red and white flowers. It takes from five to eight years to grow, and it does best in a temperate climate. In spring

41878 and 41879—Continued.

it bears fruits, which grow to the size of large sparrow's eggs. The seeds are drab outside and whitish inside. They sell in the market for 100 to 150 cash per cattie. This is one of the five principal poisons mentioned by Shen Nung, so the plant is probably indigenous to China. The Arabic name is *ba to*, which was probably derived from the Chinese name. One of the Persian names means Ricinus from China, so that it is quite possible that the original habitat of this plant was here. The *pa tou* is oblong, obscurely triangular, about three-quarters of an inch in length, 3-celled, and of a yellowish brown color. Each cell contains an oval, flattened, or imperfectly quadrangular seed, resembling a coffee bean. The dark-brown testa incloses the yellowish albumen, within which is the large dicotyledonous embryo, often much shrunken. The testa is very acrid. The fresh fruits, the oil, the testa, and the root of the tree are all used in medicine. The drug is recommended for a very large number of difficulties, but, generally speaking, the Chinese doctors are afraid to employ it on account of the exaggerated notions of its poisonous properties, which were handed down from very ancient times." (*Widler.*)

41880. BROSIMUM ALICASTRUM Swartz. Moraceæ. **Bread-nut tree.**

From Merida, Yucatan, Mexico. Presented by Dr. L. Lavedan, New Orleans, La., through Mr. O. F. Cook, of the Bureau of Plant Industry. Received February 11, 1916.

"The leaves are used extensively for forage purposes in Yucatan, as already reported by Mr. G. N. Collins of this office a few years ago. Dr. Lavedan also considers that the seeds, which are produced in great abundance, might be utilized as a source of industrial starch or perhaps distilled into alcohol. I have assured him that we would be interested to test the possibilities of growing this tree, at least in southern Florida." (*Cook.*)

41881. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Cairns, Queensland, Australia. Cuttings presented by Mr. G. Williams, Department of Agriculture and Stock. Received January 31, 1916.

Introduced for breeding experiments.

41882. PHASEOLUS CARACALLA L. Fabaceæ. **Bertoni bean.**

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni. Received February 2, 1916.

S. P. I. No. 37010, received as *Phaseolus bertonii*, a name given by Dr. Franceschi to a Paraguayan bean, is apparently identical with this species.

41883 to 41900.

From Kirki, India. Presented by Mr. William Burns, economic botanist, through Mr. C. V. Piper. Received in January, 1916. Descriptive notes by Mr. Piper.

41883. ALYSICARPUS LONGIFOLIUS (Rottl.) Wight and Arn. Fabaceæ.

"An annual, erect legume growing 3 to 5 feet high; leaves lanceolate; stems slender, rather woody; native to India. In tests in Florida, Mississippi, and elsewhere this plant succeeds well but requires a long summer season to mature. Owing to its sparse leafiness and tough stems, as well as lack of great vigor, it is not promising."

See S. P. I. No. 32432 for previous introduction.

41883 to 41900—Continued.

41884. Alysicarpus rugosus (Willd.) DC. Fabaceæ.

"An annual erect legume, native to southern Asia and Africa and introduced into the West Indies. The species is variable, but several introductions tested in Florida and Mississippi do not give warrant that the plant is worthy of cultivation. The stems are rather tough, spreading or erect, 3 to 4 feet high in some varieties."

For previous introductions, see S. P. I. Nos. 32312, 33444, and 34933.

41885 to 41900. Poaceæ. **Grass.**

41885. Andropogon annulatus Forsk. **Palwan.**

"An abundant, native perennial grass in India, much used for fodder, both the yield and quality being good. It belongs to a group of species which are closely interrelated, but all furnish fairly good forage. The species are well adapted to Gulf coast conditions and are at present the subject of careful investigation, as the best of them will probably be worthy of cultivation. *Andropogon annulatus* is a widespread species over Africa and southern Asia. The vernacular name commonly used in the Punjab is *palwan.* Closely related species are *Andropogon pertusus* (the sour-grass of Barbados), *A. caricosus,* and *A. bifoveolatus.*"

For previous introductions, see S. P. I. Nos. 32441, 33595, 33596, 34934, and 39716.

41886. Andropogon caricosus L.

"A species much like the preceding and of similar value. Introduced in Antigua, where it is valued as a hay grass."

For previous introduction, see S. P. I. No. 26581.

41887. Andropogon emersus Fourn.

An erect perennial grass, found in dry, rocky places in Mexico and the southwestern United States, with feathery fan-shaped panicles of numerous slender racemes 8 cm. (3 inches) long. The outer glumes of the sessile spikelets are marked with pinholelike pits above the middle. (Adapted from *A. S. Hitchcock,* in *Contributions from the U. S. National Herbarium, vol. 17, pp. 202 and 207,* under *A. perforatus.*)

41888. Andropogon lawsoni Hook. f.

"A perennial species with creeping rootstocks, native to Mysore, India."

41889. Andropogon odoratus Lisboa.

"A species with odorous herbage and stems 3 to 4 feet high, thick as a goose quill. Native to the Dekkan, India."

41890. Andropogon pumilus Roxb.

"A slender species with stem 6 to 18 inches high, native in the drier parts of India."

41891. Andropogon purpureo-sericeus Hochst.

"An annual species with stems 3 to 4 feet high. Native to Abyssinia and India."

41892. Apluda aristata Torner.

"A leafy perennial grass, the tall, stiff stems branched above. Readily eaten by cattle when young, according to Duthie, but becoming rather woody."

41883 to 41900—Continued.

41893. Arundinella agrostoides Trin.

"An annual grass with stems 6 to 18 inches high, the leaves broad and flat. Native to India and the Philippines."

41894. Cenchrus biflorus Roxb.

"A perennial grass, native to southern Asia and Africa. It is abundant in northern India, where it is considered one of the most nutritious grasses and excellent both for grazing and for hay. In Florida and along the Gulf coast it succeeds well and tends to spread naturally, but the growth is sufficient only for grazing, as on sandy soil the grass grows only 6 to 12 inches high."

For previous introductions, see S. P. I. Nos. 33601 to 33603.

41895. Chionachne barbata (Roxb.) R. Br.

"A tall, coarse, branching grass, native to the hot and damp parts of India. When mature the grass is very coarse, but when young it is said to be used as fodder."

41896. Chloris gayana Kunth. **Rhodes grass.**

"A perennial grass, native to South Africa, first cultivated by Cecil Rhodes in South Africa about 1895. The grass is fine stemmed, very leafy, and grows to an average height of about 3 feet. The flowering head consists of 10 to 15 long, spreading spikes in a cluster, and seed is produced in abundance. The grass also spreads by means of running branches 2 to 6 feet long, which root and produce a plant at every node. Notwithstanding this method of reproduction, Rhodes grass has at no place in the United States become troublesome as a weed. Rhodes grass is completely destroyed when the temperature in winter falls to about 18° F., and as a perennial grass is therefore adapted only to southern Texas, Florida, and a narrow strip along the Gulf coast. Farther north it must be treated as an annual. At Washington, D. C., it will produce but a single crop of hay a season. Farther south two cuttings may be obtained under favorable conditions. On fertile land in central and southern Florida, however, as many as six or seven cuttings are secured in a single season. A good stand of Rhodes grass will yield from a ton and a quarter to a ton and a half of hay to a cutting. This hay is of very fine quality and is eagerly eaten by horses and cows. In Florida it is already being grown on a commercial scale."

41897. Chloris paraguaiensis Steud.

"A perennial grass native to India, Burma, and Ceylon, but now widespread in the Tropics. According to Duthie, it is considered in northern India 'a good fodder grass up to the time of flowering, after which time cattle will not touch it.' In Australia it is considered one of the best grasses for pasturage and hay."

41898. Chloris virgata Swartz.

"An annual grass forming stools 2 to 3 feet high. Originally described from the West Indies, but apparently the same species occurs in the Tropics of the Old World. It has been tested at many places in the United States, but nowhere has it given sufficient promise to warrant cultivation. Other introductions under this name, presumably the same species, are S. P. I. Nos. 13895, 13901, 15335, 15337, 15354, 15355, and 21312, all from South Africa, where it is regarded as a valuable grass. No. 21700, from Peking, is apparently a different grass."

41883 to 41900—Continued.

41899. CHRYSOPOGON MONTANUS Trin.

"This perennial grass is a handsome species growing to a height of 3 to 5 feet. In India it has an excellent reputation for fodder, and, according to Duthie, the seeds are collected and used for food by the natives. This grass has succeeded well in Florida and at Biloxi, Miss., and in this region possesses some promise as a pasture grass."

For previous introductions, see S. P. I. Nos. 33445 and 34935.

41900. COIX LACRYMA-JOBI L. **Job's-tears.**

"A coarse, annual grass with unusually numerous stems and leaves one-half to 1½ inches broad. The varieties are numerous, and few of them will mature except in the South. The fruit is peculiar, the female spikelet being inclosed in a capsule composed of a thickened sheath. In most varieties this is hard and porcelainlike, varying in form from cylindrical to globose. These capsules are used as beads for rosaries. In the variety *ma-yuen* the capsules are soft, and in Burma, especially, are used for human food. The largest varieties grow 4 to 8 feet high and furnish abundant forage of fair quality. None has yet found a place in cultivation in the United States except to a slight extent as an ornamental. This grass requires a long warm season to mature."

41901. HEDYSARUM BOREALE Nutt. Fabaceæ.

From Saskatoon, Saskatchewan, Canada. Presented by Prof. T. N. Willing, University of Saskatchewan. Received March 16, 1916.

"A perennial leguminous herb with compound leaves and showy racemes of many deflexed magenta to white flowers, native from Newfoundland and northern New England to Alaska; suggested as possibly valuable for breeding with sulla (*H. coronarium*), the southern species grown so extensively in Algeria, Tunis, and Spain for fodder." (*Fairchild.*)

41902 to 41916.

From Kirkee, India. Presented by Mr. William Burns, economic botanist, through Mr. C. V. Piper. Received in January, 1916. Descriptive notes by Mr. Piper except where otherwise indicated.

41902. DINEBRA ARABICA Jacq. Poaceæ. **Grass.**

"An annual grass with stems branching from the base, erect or ascending, 1 to 3 feet long. A handsome grass, but not abundant in India and therefore unimportant. Native to southern Asia and northern Africa."

41903. ERAGROSTIS ABYSSINICA (Jacq.) Schrad. Poaceæ. **Teff.**
(*Poa abyssinica* Jacq.)

"*Teff*, cultivated as a food grain in Abyssinia, has in recent years proved very valuable for hay production in South Africa. In view of these results it is at present being tested again in various parts of the United States. Numerous previous trials have indicated that teff can not compete with heavier yielding annuals, such as millet and Sudan grass, as a hay crop, but in some parts of the United States it may yet prove to be valuable."

For previous introduction, see S. P. I. No. 40535.

41902 to 41916—Continued.

41904. Eragrostis elegans Nees. Poaceæ. **Grass.**

"An annual grass with stems 1 to 3 feet high bearing long, flat leaves. 'It is not considered a first-class fodder grass, but cattle eat it readily when other better kinds have failed.' (*Duthie.*) Indigenous in India, Burma, Ceylon, Mesopotamia, and Africa."

41905. Euchlaena mexicana Schrad. Poaceæ. **Teosinte.**

"A coarse annual grass native to Mexico, where it was cultivated in prehistoric times. It resembles corn rather closely, and some botanists consider that corn has been derived from teosinte in the course of long cultivation. The two plants may be hybridized without difficulty.

"Teosinte grows from 8 to 12 feet high and commonly produces many stems from the same root. No variety of it has ever matured north of central Mississippi, but it is commonly grown as far north as New Jersey and Minnesota. The first frosts of autumn promptly turn the leaves brown. For the best results teosinte requires fertile soil and a long season of moist, warm weather.

"Formerly teosinte was grown extensively in the Southern States. On soil of moderate fertility it does not yield as well as the sorghums, and in Florida and along the Gulf coast it can not compete with Japanese sugar cane for forage except on very rich soils.

"Teosinte is best planted in hills 4 to 5 feet apart each way, which requires about 3 pounds of seed per acre; or it may be planted in rows 4 to 5 feet apart, using about 5 pounds of seed per acre. Its cultivation should be essentially the same as for corn.

"The crop may be used for silage, for dry fodder, or for green food. For the latter two purposes it may be cut several times during the season as it promptly tillers from the stubble. For silage, it is better to allow it to become nearly mature.

"Under the most favorable conditions teosinte gives extraordinary yields. Thus, the Louisiana Agricultural Experiment Station secured nearly 50 tons of green fodder per acre; the South Carolina Agricultural Experiment Station reports 43,923 pounds, green weight, per acre from six cuttings and the Georgia Experiment Station 38,000 pounds per acre.

"In spite of these large yields under favorable conditions, the culture of teosinte has diminished, so that it is now little grown. Under ordinary conditions, at least, corn, sorghum, and Japanese sugar cane are preferred."

41906. Holcus halepensis L. Poaceæ. **Johnson grass.**
(*Sorghum halepense* Pers.)

"Probably var. *miliformis*, which has smaller, usually unarmed spikelets, the only form common in India."

41907. Holcus sorghum sudanensis (Piper) Hitchc. Poaceæ. **Sudan grass.**

41908. Indigofera glandulosa Wendl. Fabaceæ. **Befri.**

"*Befri* succeeds well as a summer annual from Washington, D. C., southward, but the plant grows only 6 to 8 inches high. For forage, at least, it holds no promise under American conditions."

For previous introductions, see S. P. I. Nos. 22732, 33446, 34936, and especially 23535.

41902 to 41916—Continued.

41909. Indigofera trifoliata Torner. Fabaceæ. **Indigo.**

A perennial having copiously branched trailing or suberect stems 1 to 2 feet long, soon glabrescent. Found in the Himalayas, ascending to 4,000 feet in Kumaon, to Ceylon and Tenasserim. (Adapted from *Hooker, Flora of British India, vol. 2, p. 96,* under *I. trifoliata* Linn.)

41910. Ischaemum aristatum L. Poaceæ. **Grass.**

"A perennial grass growing 1 to 4 feet high. Indigenous in China, the Malay Peninsula, India, and Ceylon."

41911. Ischaemum pilosum (Klein) Hack. Poaceæ. **Grass.**

"A perennial grass with creeping rootstocks, native to India, used for fodder, being cut mainly for buffaloes. A previous introduction, S. P. I. No. 32438, proved to be unviable seed."

41912. Ischaemum sulcatum Hack. Poaceæ. **Grass.**

"A grass 12 to 18 inches high, with numerous branched stems. Native to central India."

41913. Iseilema anthephoroides Hack. Poaceæ. **Grass.**

"Native to southern Dekkan and closely related to *Iseilema laxum.* Presumably its fodder value is also equal."

41914. Iseilema wightii (Nees) Anderss. Poaceæ. **Grass.**

"A grass native to India, occurring in low and swampy land. Stems 1 to 3 feet high. Duthie considers its fodder value probably equal to that of *Iseilema laxum,* which is highly valued both as natural pasturage and when cut for hay. Hooker says it is perennial, but *I. laxum* is annual."

41915. Pennisetum ciliare (L.) Link. Poaceæ. **Grass.**
(*Pennisetum cenchroides* Rich.)

"One of the most valuable pasture and hay grasses of India. Native to India and Africa and introduced into the American Tropics."

41916. Sesban aculeatum (Schreb.) Poir. Fabaceæ.

"A tall, very rapid growing species, reaching a height in one season of 12 to 20 feet in Florida and Mississippi, the stems woody and 2 to 4 inches in diameter. While this species is employed as a green-manure crop in the Tropics, its woody stems and great growth make it undesirable for agricultural use in America."

For a previous introduction, see S. P. I. No. 21368.

41917. Gossypium hirsutum L. Malvaceæ. **Cotton.**

From Mustapha, Algiers, Algeria. Presented by Dr. L. Trabut. Numbered February, 1916.

"A variety of cotton cultivated at Lemnos, grown without irrigation in ordinary soil." (*Trabut.*)

41918 to 41921.

From Kirki, India. Presented by Mr. William Burns, economic botanist, through Mr. C. V. Piper. Received in January, 1916. Descriptive notes by Mr. Piper.

41918 to 41921—Continued.

41918. Thelepogon elegans Roth. Poaceæ. Grass.

"A coarse perennial grass with stems 1 to 3 feet high, usually woody at the base. When growing in rice fields it is difficult to distinguish until in flower. Cattle and horses eat the herbage when it is young, and in some parts of the Central Provinces the seeds are used as human food. Native to India and Africa."

41919. Themeda quadrivalvis (L.) Kuntze. Poaceæ. Grass.

"A coarse, rather tough annual grass growing in tufts 1 to 3 feet high. It is closely related to the kangaroo grass of Australia and Tasmania. Probably the same as S. P. I. Nos. 13434 and 21637."

41920. Trachys mucronata Pers. Poaceæ. Grass.

"A perennial grass of sandy land near the seashore, native to southern India and Ceylon. The weak sprawling stems root at the nodes."

41921. Tricholaena rosea Nees. Poaceæ. Natal grass.
(*Panicum teneriffae* R. Br.)

"When a single plant of Natal grass is allowed abundant room it will form a large tuft, sometimes 3 to 4 feet in diameter. The lower branches soon become decumbent, while the central stems are slender, 3 to 4 feet high, and well covered with leaves, which are so nearly erect that few are lost in mowing the hay. The seeds are produced in large clusters of about the size and shape of a panicle of oats. In most cases the seed clusters are bright red or rosy crimson in color, and for that reason the grass has sometimes been called redtop. It is, however, very different from the common northern grass known as redtop. The name *Natal grass*, which indicates the country of which it is a native, is more appropriate and distinctive, and is the one now in most common use. The plants are killed by a single plowing, and by keeping the land cultivated in other crops through the whole of a single season all the seeds in the ground will have germinated and the young plants will be killed by the cultivation, so Natal grass can not become a troublesome weed."

41922. Rubus sp. Rosaceæ. **Bramble.**

From San Francisco, Cal. Presented by Mr. John McLaren, Superintendent of Parks and Squares. Received January 21, 1916.

Plants of a Rubus apparently not in our collections.

41923. Ophiopogon japonicus (L.) Ker. Liliaceæ.

From Baton Rouge, La. Roots presented by Mr. W. R. Dodson, director, Agricultural Experiment Station. Received February 14, 1916.

A low-growing herbaceous plant, with numerous erect, narrow linear root leaves from one-half to 1 foot long and from one-twelfth to one-eighth inch wide, and racemes of small flowers, varying from white through lilac to violet purple. It is much used in Italy and southern France for green turf and for border edges. It needs no clipping and will stand under the shade of trees, making a dark-green lawn covering, standing well in drought. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2355, 1916.*)

41924. ARUNDINARIA PUMILA Mitford. Poaceæ. **Bamboo.**

From San Francisco, Cal. Roots presented by Mr. John McLaren, Superintendent of Parks and Squares. Received February 15, 1916.

"A very pretty and ornamental dwarf bamboo. At first one might be tempted to confound this species with *Arundinaria humilis*, but closer observation leads to the conviction that it is quite a distinct plant. It is less tall, the leaves are darker green, shorter, and not so broad, and do not taper so gradually to a point as those of *Arundinaria humilis.* The tessellation is closer, the teeth of the serrated edges are, if anything, less conspicuous, and the nodes are less well defined and far less downy; but, on the other hand, they have a waxy bloom not to be found in *A. humilis.* The stem is much more slender and more entirely purple except quite at the base.

"The culms are about 15 inches high or rather more, round, and very slender. The leaves are about 5 inches long by a half to three-quarters of an inch in breadth, bright green in color. Altogether a brilliant little plant, quite hardy, and a very effective ornament for some rocky nook, where, as it does not seem much inclined to run at the roots, it may better be kept within bounds than some of its family." (*Mitford, The Bamboo Garden, p. 98.*)

41925. CARAGANA ARBORESCENS Lam. Fabaceæ. **Siberian pea tree.**

From Indian Head, Saskatchewan, Canada. Presented by Mr. Norman M. Ross, Forestry Branch. Received February 11, 1916.

41926 and 41927.

From Horqueta, Paraguay. Presented by Mr. Thomas R. Gwynn, through Mr. Daniel F. Mooney, American minister, Asuncion. Received February 12, 1916.

41926. CITRUS MEDICA L. Rutaceæ. **Citron.**

Brazilian citron.

41927. CUCURBITA MAXIMA Duchesne. Cucurbitaceæ. **Squash.**

A type that may prove of value in the Southwest.

41928. PHASEOLUS SEMIERECTUS L. Fabaceæ.

From Chuluota, Fla. Presented by Mr. Lawrence Swanson. Received February 12, 1916.

"*Jauguario.* My introduction from Cuba, where I found it growing along the banks of the River Jaugua and which has proved of more value as a cover crop than many old stand-bys. It has interested everyone who has seen it growing. It is a perennial and with me has grown again after the tips are frosted. The seeds are very scarce. From observation I think the best results will be had after the first year from seed; in its second and third year it seems to master the ground and spreads rapidly." (*Swanson.*)

41929. INDIGOFERA ARGENTEA L. Fabaceæ. **Indigo.**

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, horticultural division, Gizeh Branch, Ministry of Agriculture. Received February 14, 1916.

"This species is the only one cultivated in Egypt for dye production." (*Brown.*)

"It is a perennial plant, but in cultivation is either biennial or (generally) annual. It is of a woody nature, the dye being extracted from the leaves." (*Foaden and Fletcher.*)

For a full description and directions for cultivation, see Foaden and Fletcher, Text-Book of Egyptian Agriculture, pp. 512 to 519.

41930. JUGLANS DOMINGENSIS Dode. Juglandaceæ. **Dominican walnut.**

From Puerto Plata, Dominican Republic. Presented by Mr. Frank Anderson Henry, American consul. Received February 17, 1916.

"These walnuts were obtained with the kind assistance of Don Virgilio Batista, of Jarabacoa, near which village the trees are found. The walnut does not appear to be very common in this part of the Dominican Republic and is probably found only at an altitude of more than 1,000 feet above sea level. Jarabacoa has an elevation of about 1,800 feet." (*Henry.*)

41931 to 41945.

From Brazil. Collected by Mr. H. M. Curran. Received February 15, 1916. Descriptive notes by Mr. Curran.

41931. LANTANA CAMARA NIVEA (Vent.) Bailey. Verbenaceæ.

"No. 10. Seed from plants 3 to 4 feet high, growing wild on hills, all flowers pure white; others in region pure red. All shades more delicate than common red and yellow cultivated, form and odor less marked. Collected at Rio de Janeiro, November 21, 1915."

41932. THUNBERGIA sp. Acanthaceæ.

"No. 8. Yellow flowers with dark centers; showy. Green foliage. Wild by roadsides. Ripe seeds collected at Rio de Janeiro, November 21, 1915."

41933. CARINIANA LEGALIS (Mart.) Kuntze. Lecythidaceæ. Jequitiba. (*Couratari legalis* Mart.)

"No. 45. *Jequitiba.* One of the commoner and largest of Bahian timber trees. Ornamental. Wood hard, light brown, and well known in markets."

For an illustration of the jequitiba, see Plate II.

41934. GEONOMA ERYTHROSPADICE Barb.-Rodr. Phœnicaceæ. Palm.

"No. 31. *Orecana brava.* A small ornamental palm, 4 to 10 feet high. The stems, from the size of lead pencils to three-fourths of an inch in diameter, are used as canes and whipstocks. Leaves durable in weather and used as thatch."

41935. IPOMOEA sp. Convolvulaceæ.

"No. 68. A common ornamental in Bahia gardens. A strong, vigorous climber with palmately dissected leaves and large yellow, very bright and very showy flowers."

41936. PTEROCARPUS VIOLACEUS Vog. Fabaceæ.

"No. 23. *Pau de sangue* (bloodwood), a large, very ornamental tree with yellow flowers. Wood, white, soft; used like our basswood."

41937. CYCLOLOBIUM BLANCHETIANUM Tulasne. Fabaceæ.

"No. 20. *Pau de sangue.* An ornamental timber tree."

41938. PELTOGYNE PAUCIFLORA Benth. Cæsalpiniaceæ.

"No. 3. *Pau roxo.* Purple heart, a well-known timber tree, with dark-purple wood, hard and heavy, used for making cart wheels. A large ornamental tree."

41931 to 41945—Continued.

41939. PTEROCARPUS VIOLACEUS Vog. Fabaceæ.

"No. 28. *Pau de sangue.* Probably the same as No. 23 [S. P. I. No. 41936]."

41940. PIPTADENIA sp. Mimosaceæ.

"No. 19. A large timber tree, with medium-hard wood. Ornamental. Native name *Angico branco.*"

41941. ALPINIA sp. Zinziberaceæ.
(*Renealmia* sp.)

"No. 30. *Papatinga.* An ornamental plant 2 to 4 feet high. The fruits yield a black color used as an ink or dye."

41942. HELICONIA sp. Musaceæ.

"No. 46. A very ornamental flowering plant which grows in dense masses in moist soils by streams; 2 to 4 feet high; flowers red or yellowish."

41943. PHYLLANTHUS ACIDUS (L.) Skeels. Euphorbiaceæ.
(*Phyllanthus distichus* Muell. Arg.)

"No. 47. An ornamental tree 20 to 40 feet high. The fruits are white and used to make preserves as we preserve cherries, etc. Common in cultivation. Fruits freely; two crops a year."

41944. VOUAPA sp. Cæsalpiniaceæ.
(*Macrolobium* sp.)

"No. 54. An ornamental timber tree growing on river banks."

41945. VIROLA sp. Myristicaceæ.

"No. 41. *Ucuúba.* A common ornamental and timber tree of large size, with brown, medium-hard wood, well known on the Brazilian market. The seed is said to yield an oil used in medicine and for soap making."

41946. LONICERA ORIENTALIS LONGIFOLIA Dipp. Caprifoliaceæ.
(*Lonicera Kesselringi* Regel.) **Honeysuckle.**

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received February 24, 1916.

"Our experience with Lonicera seeds is that, like Berberis seeds and various others, they often lie in the soil for a year or more before they germinate. What we do is to plunge the pots outside, exposed to the frost, after six to nine months in a propagating house." (*Prain.*)

"It has oblong or oval-lanceolate leaves 1½ to 2½ inches long, rarely more than three-fourths inch wide. Flowers pink, smaller than in *orientalis*, the corolla tube only slightly swollen; stalk one-third inch long. Introduced from Kamchatka in 1888." (*Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 51.*)

See S. P. I. No. 40184 for previous introduction.

41947. HESPERETHUSA CRENULATA (Roxb.) Roemer. Rutaceæ.
(*Limonia acidissima* L.)

From Sibpur, near Calcutta, India. Presented by the curator, Royal Botanic Gardens. Received February 8, 1916.

See S. P. I. Nos. 26496 and 29170 for previous introductions and description as *Limonia acidissima* L.

41948. LICANIA sp. Rosaceæ.

From Merida, Yucatan, Mexico. Presented by Dr. M. Calvino, Department of Agriculture and Commerce. Received February 21, 1916.

"*Uspib.*" Tree with large, entire, leathery leaves and clusters of small inconspicuous flowers. The fruit is said to be edible.

41949 to 41951.

From Havana, Cuba. Presented by Mr. William Brockway. Received February 11, 1916. Quoted notes by Mr. Brockway.

41949. OPERCULINA TUBEROSA (L.) Meissn. Convolvulaceæ.

"No. 1. Climbing vine. The sap from this plant, especially when green, is very milky and sticky and may have rubber possibilities. Should be propagated in a warm climate."

41950. BRADBURYA PLUMIERI (Turp.) Kuntze. Fabaceæ.

"No. 2. Magnificent when in flower. Flower as large as a silver dollar, snow white splashed with scarlet; a fine flower and worthy of cultivation; flowers in November and December. Vines 30 feet long."

41951. PHASEOLUS ADENANTHUS G. Meyer. Fabaceæ.

"No. 3. Flowers white splashed with purple, turning yellow when matured. Vine 30 feet long, fine climber; flowers in January."

41952 to 41954.

From China. Collected by Mr. D. F. Higgins, Peking. Received February 21, 1916. Descriptive notes by Mr. Higgins.

41952 and 41953. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. **Hawthorn.**

41952. "*Sia-la-hung* [*Shan li hung*]. Collected near Peking, China, October 12, 1915. Seeds of the large Chinese thorn-apple, which is grafted on the seedlings of the smaller variety."

41953. "*Sia-la-hung* [*Shan li hung*]. Collected near Peking, China, October 12, 1915. Seeds of the Chinese thorn-apple. These seeds are the seeds of the wild indigenous variety. It is also cultivated for its fruit and for the stock on which the large variety is grafted. These seeds are fertile."

41954. PINUS BUNGEANA Zucc. Pinaceæ. **White-barked pine.**

"Seeds of the white-barked pine of North China. These seeds are from trees about 12 miles west of Peking. Collected October 12, 1915."

41955 to 41959.

From Lamao, Bataan, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture, Manila. Received February 17, 1916.

41955. CITRUS AURANTIUM L. Rutaceæ. **Sour orange.**

See S. P. I. No. 41713 for previous introduction and description.

41956. CITRUS EXCELSA Wester. Rutaceæ. **Limon-real.**

See S. P. I. No. 41714 for previous introduction and description.

41957. CITRUS LIMETTA AROMATICA Wester. Rutaceæ.

See S. P. I. No. 41715 for previous introduction and description.

41958. CITRUS MITIS Blanco. Rutaceæ. **Calamondin.**

"A small, somewhat spiny tree, 4 to 6 meters tall; leaves elliptic-oblong, entire, crenulate, 4 to 9 cm. long; petioles scarcely winged, 10 to 15 mm. long; flowers small, usually solitary, white; fruit globose,

41955 to 41959—Continued.

orange-yellow, 2 to 4 cm. in diameter; skin smooth, thin, brittle, separable from the flesh; flesh orange colored, juicy, acid; aroma distinct; juice sacs rather large, short, and contained in six to eight locules; seeds comparatively large, smooth, plump, sometimes beaked. Philippines, probably extending to the Sunda Isles. With the *cabuyao* the *calamondin* shares the distinction of being indigenous to the Philippines. It is still rare in foreign countries. In Hawaii it is known as the *Chinese orange.* The *calamondin* makes an exceedingly attractive ornamental tree, and the fruit makes a delicious marmalade and a good cooling drink. As far as observed the species occurs in few forms, and the trees are almost invariably exceedingly prolific and almost everbearing." (*P. J. Wester, Citriculture in the Philippines, Philippine Bureau of Agriculture, Bulletin No. 27, p. 15.*)

41959. CITRUS WEBBERII MONTANA Wester. Rutaceæ. **Cabugao.**

A citrus fruit closely allied to the mandarin (*Citrus nobilis deliciosa*) and the alsem (*Citrus webberii*).

See S. P. I. No. 41388 for previous introduction and description.

41960. BUNCHOSIA sp. Malpighiaceæ.

From El Coyolar, Costa Rica. Plants presented by Mr. Carlos Wercklé. Numbered January 30, 1916.

"The pulp is exactly like the *Yemon* variety of the *kaki* persimmon in consistency and taste, but vermilion carmine in color." (*Wercklé.*)

41961 and 41962.

From Kew, England. Plants presented by Sir David Prain, director, Royal Botanic Gardens. Received February 25, 1916.

41961. × AESCULUS PLANTIERENSIS Andre. Æsculaceæ.

"A hybrid raised in the nursery of Messrs. Simon-Louis Frères, at Plantieres, near Metz, its parents no doubt *A. hippocastanum* and *A. carnea.* The seeds came from the former, so that it is (if the generally accepted parentage of *A. carnea* be correct) three-fourths common horse-chestnut and one part red buckeye (*A. pavia*). It shows the character of both its parents in the leaf, the leaflets being stalkless, as in *A. hippocastanum,* yet showing the strongly ridged and uneven surface of *A. carnea.* In shape and size the panicle is like that of *A. hippocastanum,* but the whole flower is suffused with a charming shade of soft pink, which it inherited from the other parent. In habit and general appearance it is intermediate. It has flowered at Kew for several years past, and I consider it a very beautiful and desirable acquisition. It has developed no fruit at Kew, and I understand from Mr. Jouin, of Plantieres, that it does not bear seed in the nursery. For public places this is an advantage." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 173.*)

41962. × ESCALLONIA LANGLEYENSIS Veitch. Escalloniaceæ.

"An elegant evergreen or, in hard winters, semievergreen shrub becoming eventually 8 feet or more high and producing long, slender, arching shoots in one season. Flowers of a charmingly bright rosy carmine, one-half inch across, produced during June and July (a few later) in short racemes of about half a dozen blossoms terminating short

41961 and 41962—Continued.

leafy twigs. This very attractive shrub was raised by Messrs. Veitch's nursery at Langley about 1899, by crossing *E. philippiana* with *E. punctata.* Although not quite so hardy as the first of these, it is hardy enough to stand all but the severest of frosts, and even then will break up again from the ground. It is distinct from other Escallonias in its slender arching branches, which bear the racemes on the upper side. The color of the flowers, too, is different from that of any other Escallonia except *E. edinensis.*" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 528.*)

41963. Barleria cristata L. Acanthaceæ.

From Manila, Philippine Islands. Cuttings presented by Mr. H. T. Edwards, director, Bureau of Agriculture, at the request of Mr. P. J. Wester, Lamao. Received February 25, 1916.

An excellent Philippine hedge plant with fairly dense spikes of attractive blue or white flowers.

See S. P. I. No. 41458 for previous introduction and description.

41964 to 41990.

From Maidstone, England. Purchased from George Bunyard & Co. Received February 24, 1916. Plants of the following; quoted notes from Bunyard's catalogue, except where otherwise indicated.

41964 to 41976. Rubus spp. Rosaceæ. **Raspberry.**

41964. "*Alexandria.* Autumn fruiting; fruit large, conical, deep red, rich flavour; vigorous and fertile. Raised by Mr. Allan, of Gunton Park Gardens."

41965. "*Hailsham.* Autumn fruiting; fruit enormous, round, dark red; growth vigorous; leaves very large; a distinct variety of much excellence. Raised by Mr. Dann, of Hailsham."

"This variety is reported as a hybrid. It is reported by the Coates Nursery, of Morganville, Cal., as an improvement on the loganberry, being sweeter." (*G. M. Darrow.*)

41966. "*Merveille Rouge* (*Belle Fontenay*). Autumn fruiting; fruit medium, round, dark purple; growth rather dwarf. A good variety which, though old, is still one of the best and fruits into October."

41967. "*November Abundance.* Autumn fruiting; fruit very large, deep red, borne in clusters; canes very strong; fruits up to November. Introduced by Messrs. Veitch."

41968. "*October Yellow.* Autumn fruiting; fruits large, round, deep yellow, sweet and well flavoured; growth moderate. An old sort, of value as an autumnal variety."

41969. "*Surprise d'Automne.* Autumn fruiting; fruit large, yellow, freely produced, and of sweet flavour. A very remarkable continental variety which is certainly the most prolific and latest of yellow autumnal kinds."

41970. "*Yellow Four Seasons.* Autumn fruiting. Resembles and probably identical with *October Yellow.* Free bearer; very sweet."

41971. "*Baumforth Seedling.* Fruit round, large, dark crimson; very vigorous grower. A seedling from *Northumberland Fillbasket.*"

41964 to 41990—Continued.

41972. "*Devon.* Fruit large, round, keeping a bright red when ripe; remarkably vigorous and very fertile. On trial here, but highly commended by the raiser, Mr. Pyne, of Topsham, who introduced it in 1904."

41973. "*Norwich Wonder.* Fruit large, round, ripening earlier than other sorts; very fertile and vigorous."

41974. "*Profusion.* Berries immense, dark red, round, of delicious flavour; vigorous and prolific. A variety raised near Maidstone and introduced by us. Can be highly recommended."

41975. "*Golden Drop.* Fruit deep golden, round, pleasantly flavoured; canes strong. A continental variety of which the original name has been lost; we name it as above provisionally."

41976. "*Guinea.* Fruits conical, deep yellow, very rich and sweet; canes of moderate growth. This variety is a *Yellow Superlative,* and the variety sent out under that name is practically identical."

41977 to 41987. FRAGARIA spp. Rosaceæ. **Strawberry.**

41977. "*Merveille de France.* Autumn fruiting; fruit enormous; growth free but compact; very rich flavour in June."

41978. "*St. Antoine de Padoue.* Autumn fruiting; berries globular, ripening well, of bright red colour; habit more vigorous than others; the summer fruits are also abundant."

41979. "*St. Fiacre.* This is a grand autumnal bearer. The berries are as large as *Royal Sovereign,* freely produced, bright colour, and rich flavour. The finest yet produced."

41980. "*Countess.* Fruits handsome, wedge shaped, dark crimson; moderate cropper, but in point of flavour quite first rate. F. C. C. R. H. S."

41981. "*Filbert Pine.* Robust grower; dull orange red, brisk in flavour; succeeds in light soils; enormous cropper."

41982. "*Fillbasket.* Bright red, good flavour; enormous bearer; very good for main crops; flowers late and is thus useful in positions liable to frosts; makes few runners."

41983. "*Givon's Late Prolific.* Dark dull crimson, firm, roundish oval, often three sided, of rich brisk flavour. The very finest of all the late sorts; a heavy successional bearer; fruits extra large and handsome, with good constitution; flowering late, with abundant foliage. A Herts customer reports a splendid crop—seven fruits to the pound."

41984. "*Hibberd's George V.* Our trial plants, although placed in a bad position, gave us wonderful berries on July 8, 1913, after the ordinary crops were passed—quite 14 days later than *Sir Joseph Paxton.* The fruits were large, some cockscomb shaped, very bright shining scarlet in colour; flesh carmine, very firm, and the flavour was equal to the best. We confidently recommend this new variety to all growers and have raised a large stock in order to offer cheaply."

41985. "*Laxton's Latest.* A very fine variety; shining deep crimson, fine flavour; moderate growth; enormous in size, yet firm, approaching 2 ounces."

41964 to 41990—Continued.

41986. "*Reward.* Fruit very large, wedge shaped, of rich vinous flavour, deep red, firm flesh; one of the best main-crop varieties."

41987. "*Waterloo.* Very large, withstanding the heat well; remarkable for its black mulberrylike appearance; for latest picking."

41988 to 41990. Ribes vulgare Lam. Grossulariaceæ. **Garden currant.**

41988. "*New Red Dutch.* Berries medium, but all of an even size; not diminished toward end of bunch; bright red, rather late; vigorous grower, resembling *Raby Castle* in foliage but more spreading habit. One of the best all-round kinds. Origin unknown; largely grown in Kent for market."

41989. "*Scotch.* Berries large, bright red; bunches medium, very fertile; growth vigorous, upright; foliage much cut and cupped. This sort may be always distinguished when in bloom, as the flower spikes are held horizontally. A valuable early-market sort. Origin unknown."

41990. "*Utrecht.* Berries medium, dark red; bunches medium; growth vigorous, upright; leaves resembling *Scotch* but distinct. A useful midseason variety; origin probably indicated by its name."

41991 to 42016. Triticum spp. Poaceæ. **Wheat.**

From Cawnpore, United Provinces, India. Presented by Mr. H. Martin Leake, economic botanist to the Government, at the request of Mr. A. Howard, Pusa. Received January 28, 1916.

41991 to 42006. Triticum aestivum L.
(*Triticum vulgare* Vill.)

41991. "No. 137. Bearded, red, felted, white grain."
41992. "No. 2778. Bearded, red, felted, red grain."
41993. "No. 169. Bearded, white, felted, white grain."
41994. "No. 195. Bearded, white, felted, red grain."
41995. "No. 627. Bearded, red, glabrous, white grain."
41996. "No. 1056. Bearded, red, glabrous, red grain."
41997. "No. 1289. Bearded, white, glabrous, white grain."
41998. "No. 3769. Bearded, white, glabrous, red grain."
41999. "No. 2755. Bald, red, felted, white grain."
42000. "No. 2771. Bald, red, felted, red grain."
42001. "No. 2799. Bald, white, felted, white grain."
42002. "No. 2822. Bald, white, felted, red grain."
42003. "No. 3794. Bald, red, glabrous, white grain."
42004. "No. 3123. Bald, red, glabrous, red grain."
42005. "No. 3513. Bald, white, glabrous, white grain."
42006. "No. 3561. Bald, white, glabrous, red grain."

42007 to 42012. Triticum durum Desf.

42007. "No. 9. Bearded, white, felted, white grain."
42008. "No. 18. Bearded, red, felted, white grain."
42009. "No. 34. *Kathias.* Bearded, white, glabrous, white grain."

41991 to 42016—Continued.

42010. "No. 47. *Kathias.* Bearded, white, glabrous, red grain."

42011. "No. 85. *Kathias.* Bearded, red, glabrous, white grain."

42012. "No. 124. *Kathias.* Bearded, red, glabrous, red grain."

42013 and 42014. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

42013. "No. 125. Var. *compactum.* Bearded, white, glabrous, white grain."

42014. "No. 132. Var. *compactum.* Bald, white, glabrous, white grain."

42015. TRITICUM DURUM Desf.

"No. 2."

42016. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

Var. *compactum.*

42017. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. **Hawthorn.**

From China. Presented by Rev. Horace W. Houlding, Tamingfu, Chihli, North China. Received February 3, 1916.

"*Shan li hung* or mountain red pear. My wife says that in her estimation it stands next to the apple for home use in cooking. It is good for jelly and marmalade and when dipped whole into melted rock sugar it makes the finest confection and one of the most healthful that I know of. There is a use for this fruit in America." (*Houlding.*)

42018 and 42019.

From India. Presented by Maj. A. T. Gage, director, Royal Botanic Garden, Sibpur, Calcutta, who secured it from the Director of Agriculture, Srinagar, Kashmir. Received February 24, 1916.

42018. MEDICAGO FALCATA L. Fabaceæ. **Lucern.**

"Ordinary Ladakh lucern."

42019. MELILOTUS OFFICINALIS (L.) Lam. Fabaceæ. **Yellow sweet clover.**

"*Rugsug* (?) in Ladakh."

42020. COLOCASIA ESCULENTA (L.) Schott. Araceæ. **Dasheen.**

From Cristobal, Canal Zone. Tubers presented by Mr. O. W. Barrett. Received March 2, 1916.

"*Twin* dasheen; local variety. About 40 per cent of the plants are twins. In good soil this variety reaches 6 to 8 feet to leaf blade. Small offsets, but fine large 'madre' up to 4 pounds each. From Bracho plantation." (*Barrett.*)

42021. COLOCASIA ESCULENTA (L.) Schott. Araceæ. **Taro.**

From Yokohama, Japan. Tubers purchased from the Yokohama Nursery Company. Received March 2, 1916.

Sato-imo.

A taro of the dasheen type, obtained for botanical study, this form having flowered in Japan, where it was photographed by Mr. Frank N. Meyer, although no flowers have ever been obtained from it in the United States.

42022. Juglans regia L. Juglandaceæ. Walnut.

From New York State. Cuttings secured by Mr. C. A. Reed, of the Bureau of Plant Industry. Received March 3, 1916.

"*Abrams* walnut. The parent tree of this variety stands on property on Latta Road, Charlotte, N. Y., owned by Mrs. B. S. Abrams. It is a double tree, with trunks measuring at breast height 63 and 69 inches in circumference, respectively. The two trees are estimated to be about 60 feet tall and have a spread of about 55 feet. The tree is said to be a heavy annual bearer. Mrs. Abrams states that the crop of 1914 was about 8 bushels. The nuts are of medium size, quite spherical in form, with flattened ends, bright golden color, thin shelled, and until well dried well sealed. The kernels from the crop of 1915 are a little disappointing in that they shrink considerably; also they are somewhat objectionable in that they leave an astringent taste in the mouth. The flavor of these kernels is pleasing, though mild." (*Reed.*)

42023. Juglans regia L. Juglandaceæ. Walnut.

From Canada. Scions secured by Mr. C. A. Reed, of the Bureau of Plant Industry. Received March 3, 1916.

"*Ontario* walnut. This tree stands on a lot at 251 Queenstown Street, St. Catharines, Ontario, Canada. It is owned by Miss Alice Berger, of that address. It is estimated to be 75 or more years of age and has the reputation of being a heavy annual bearer. Its crop of 1914 is stated by Miss Berger to have been about 200 pounds of nuts. The nuts are of medium size, thin shelled, and the kernels of good quality. In the opinion of Robert T. Morris, of New York City, the flavor of these nuts is superior to that of any others of the sorts now being propagated in the Eastern States. The new growth on this tree was very short and irregular, making it difficult to obtain good wood for propagating." (*Reed.*)

42024. Humulus lupulus L. Moraceæ. Hop.

From Wye, Kent, England. Roots presented by Mr. E. S. Salmon, Southeastern Agricultural College. Received March 3, 1916.

"*Foundling.* Among the hops growing in the experimental hop garden at Wye College one plant attracted attention in 1906 and 1907 by its vigorous growth and prolific cropping qualities. It was decided to test this hop further; cuts were taken from the hill, and, in 1908, 38 hills were planted in a row in the main hop garden at Wye College. From 1908 to 1914 these hills have been under observation, and the following facts appear to be of sufficient commercial importance to merit the attention of hop growers. This hop has proved remarkably resistant to the attacks of the disease popularly known as nettlehead, skinkly, or (in Sussex) silly hill. This disease, which has been attributed to the attacks of an eelworm (*Heterodera schachtii*), is sometimes the cause of serious loss to the hop grower. No certain remedy against nettlehead is at present known, and it follows, therefore, that the constitutional resistance of a variety of hop to the disease is a matter of importance. The growth is very vigorous; the vine is green, with blotches (often inconspicuous) of dark green or red, and is very fruitful. It is a late hop, ripening about 10 days later than the *Canterbury Whitebine.* In the medium hop soil of the college hop garden the crop in an average season is about 15 hundredweight to the acre; in 1914 the hills yielded at the rate of 22 hundredweight to the acre. In richer soil at Chilham, Kent, 3 older hills and 22 hills in their second year bore in 1914 at the rate of 18 hundredweight to the acre. The hops are small to medium in size and hang very thickly on the laterals. In some respects the *Foundling* hop resembles the *Colgate* variety, though it is clearly quite distinct. The *Foundling* seems worthy of trial by the commercial hop grower on account of the following characteristics: (*a*) Good cropping qualities, (*b*) high resin production, (*c*) marked resistance to if not total immunity from the nettlehead disease, (*d*) lateness of season (coming after the *Fuggles*)." (*Journal of the Board of Agriculture, p. 136, May, 1915.*)

42025. Prosopis chilensis (Molina) Stuntz. Mimosaceæ.
(*Prosopis juliflora* DC.) **Algaroba.**

From St. Joseph, Trinidad, British West Indies. Presented by Mr. Francis Miller, St. Joseph Nurseries. Received February 7, 1916.

A tree 30 to 40 feet high (sometimes reduced to a shrub), with bipinnate leaves of 15 to 20 pairs of leaflets, each composed of one to two pairs of pinnæ, and axillary flowers in cylindrical heads resembling those of *Acacia* spp. A native of Mexico and the West Indies.

42026. Solanum sp. Salonaceæ. **Wild potato.**

From Tucuman, Argentina. Tubers presented by Mr. E. F. Schultz, horticulturist, Agricultural Experiment Station, through Mr. John S. Calvert, American vice consul, Buenos Aires. Received February 23, 1916.

"The Department of Agriculture is carrying on certain breeding experiments with potatoes, and these resistant wild strains may prove useful for this purpose. The tubers were gathered on very heavy clay soil from a piece of land which is completely water-soaked during at least three months in the year and extremely dry for about seven or eight months in succession. The tubers possess, therefore, certain resistant properties which it may be found useful to impart to the cultivated varieties in the United States." (*Schultz.*)

42027 and 42028.

From Bombay, India. Presented by Mr. W. Burns, economic botanist. Received February 18, 1916.

42027. Indigofera glandulosa Wendl. Fabaceæ. **Befri.**

An annual herbaceous legume with elongated slender branches, odd-pinnate leaflets, and dense, sessile heads of small flowers one-fourth to three-eighths of an inch long. A native of Australia and the plains of the western peninsula of India.

42028. Indigofera trifoliata Torner. Fabaceæ. **Indigo.**

A perennial, subshrubby plant with trailing or suberect copiously branched stems, 1 to 2 feet long, leaves composed of three leaflets, and racemes of small red flowers. A native of China, India, the Philippines, Java, and North Australia.

See S. P. I. No. 41909 for previous introduction.

42029. Cacara erosa (L.) Kuntze. Fabaceæ. **Yam bean.**
(*Pachyrhizus angulatus* Rich.)

From Manila, Philippine Islands. Presented by Mr. E. D. Merrill, botanist, Bureau of Science. Received February 29, 1916.

"Seeds of the ordinary wild form that is abundant in dry thickets in most parts of the Philippines." (*Merrill.*)

See S. P. I. No. 41712 for previous introduction.

42030 and 42031.

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunnicutt, director, Escola Agricola de Lavras. Received February 29, 1916.

42030. EUGENIA KLOTZSCHIANA Berg. Myrtaceæ. **Pera do campo.**

A promising fruit, similar to a small russet pear in appearance, and possessing a pleasantly acid, aromatic pulp.

See S. P. I. Nos. 37392 and 37492 for previous introductions and description.

42031. MYRCIARIA sp. Myrtaceæ. **Jaboticaba.**

A large tree bearing fruits somewhat similar to grapes of the rotundifolia type. One of the most popular Brazilian fruits.

42032 to 42035.

From Quito, Ecuador. Presented by Mr. Ludovic Söderström, through Mr. Charles S. Hartman, American minister, Quito. Received February 29, 1916. Quoted notes by Mr. Söderström.

42032. PASSIFLORA MIXTA L. f. Passifloraceæ. **Granadilla.**

" Seeds of the Passiflora, which was formerly much cultivated in the gardens at Quito but is now rarely seen. This plant is very prolific, and in my garden I have sometimes counted over 100 flowers and fruits at one time on the same plant. In the garden there are two plants from 16 to 20 years old. The natives eat the fruit raw and also use it to flavor ice cream, etc. The altitude of Quito is 9,500 feet. Collected during the months of August to December."

42033. PASSIFLORA sp. Passifloraceæ. **Granadilla.**

" Seeds of a Passiflora much cultivated by the Indians in the Valley of Zambiza, northeast of Quito. The fruit is smaller than the preceding variety [S. P. I. No. 42032], is sweeter, and contains more seeds. The flower is much attacked by bats and mice, so that at Quito the plant seldom has fruits. It also requires a warmer climate, 17° to 18° C. The Zambiza Valley is about 1,000 to 1,500 feet lower than Quito and much warmer. Collected during the months of September and October."

42034. SOLANUM QUITOENSE Lam. Solanaceæ.

"*Naranjilla;* so called by the natives. The plant is about 6 to 8 feet high with hairy leaves and produces a fruit like a small orange; it is rather acid to taste. Each plant bears hundreds of flowers and fruits. The plant lasts five or six years, when a new plantation is made. The best plantations are in the clearings at about 5,000 to 6,000 feet altitude. The mean temperature is 17° to 19° C. The fruit seems to be the principal article of food during certain seasons for the settlers in the woods. I have never found that this plant flourishes in the dry valleys in the interior, but always in the clearings in the woods."

42035. PASSIFLORA LIGULARIS Juss. Passifloraceæ. **Sweet granadilla.**

" *Granadilla* or passion-flower plant. This plant is cultivated in all the warm valleys in the interior of Ecuador. I have even found this plant growing wild in the woods at about 6,000 feet altitude. In the woods the squirrels always eat the fruit, so very few seeds can be collected there."

42036. Paulownia fortunei (Seem.) Hemsl. Scrophulariaceæ.

From Taihoku, Formosa. Presented by Mr. M. Takata, Department of Productive Industries. Received March 2, 1916.

"In raising the Paulownia tree in Japan its root is generally used for the purpose, because its seed has not been known to germinate. We should like, therefore, to have you give special attention to the matter of sowing and directing the growth of the young plants." (*Takata.*)

A magnificent tree 30 to 50 feet high, much resembling the well-known *Paulownia imperialis* (*P. tomentosa*), but having slightly shorter panicles of larger lilac or purple tinted flowers dotted with purple on the inside of the corolla. A native of central Formosa. (Adapted from *T. Ito, Icones Plantarum Japonicarum, vol. 1, no. 3, p. 5, pl. 9, 1912.*)

Received as *Paulownia mikado*, which is considered by Rehder to be identical with *P. fortunei.*

42037. Linum usitatissimum L. Linaceæ. Flax.

From Saskatoon, Saskatchewan, Canada. Presented by Mr. F. Maclure Sclanders, commissioner, Board of Trade. Received March 2, 1916.

"*Riga* (Russian) flax. Received from the Department of Agriculture, Dublin, Ireland. I am asked to test this for seed production, the object being to ascertain if we can here grow to advantage seed for the Irish flax-fiber growers, which seed now comes from Russia and costs more than we could probably supply it for. Apparently some clear distinction is drawn between the flax which we now produce for seed and that which is adapted for the production of fiber." (*Sclanders.*)

42038. Sapindus saponaria L. Sapindaceæ. Soapberry.

From Monterey, Mexico. Presented by the Compañía Jabonera. Received March 2, 1916.

"*Jaboncillo.* Fresh fruits. The outer part when boiled in water gives a superior soap for washing, especially for woolen goods, and is much used. The seed is hard and contains fat; it is not used. We consider this fruit of interest as well for the pulp, which yields soap, as for the seed, which may be of some use." (*Compañía Jabonera.*)

42039 and 42040.

From Horqueta, Paraguay. Presented by Mr. Thomas R. Gwynn. Received March 3, 1916.

42039. Psidium guajava L. Myrtaceæ. Guava.

"Seeds of a large fruit; when ripe it is a light green outside and a beautiful pink inside." (*Gwynn.*)

42040. Randia sp. Rubiaceæ.

"*Azuca revine* (?)" A spiny erect shrub with showy flowers and fruit.

42041 to 42045. Juglans regia L. Juglandaceæ. Walnut.

From New York State. Cuttings secured by Mr. C. A. Reed, of the Bureau of Plant Industry. Received March 4, 1916. Quoted notes by Mr. Reed.

"The Thomson orchard is owned by Mr. Adelbert Thomson, of Honeoye Falls, Livingston County, N. Y. It consists of 225 trees grown from seed raised in Rochester and planted in 1886 by Mr. Thomson where the trees now stand. After the nuts were planted Mr. Thomson lost interest and allowed the trees to be neglected for some 25 years, during which time they made very slow growth. In 1913 the orchard yielded from 50 to 75 bushels of nuts, which sold readily at 25 cents a pound. Encouraged by this, Mr. Thomson then broke up the sod and has since been endeavoring to get the orchard well under cultivation. The crop of 1915 amounted to approximately 150 bushels, the nuts readily selling in the Rochester markets at from 20 to 30 cents."

42041. "*Avon.* Thomson orchard, Honeoye Falls, N. Y. Tree B–16. An upright, pyramidal tree of vigorous growth, evidently late in maturing its foliage, standing second in the second row beginning at the corner next to the highway and row of spruce trees. It has a trunk circumference of 41 inches at breast height and a spread of about 25 feet. Its crop of 1915 was fairly heavy, being a bushel and a half or more. The nuts were gathered about October 25. The nuts are rather above medium size, somewhat of the *Mayette* type, though rather more wedge shaped. The most distinctive external feature is perhaps the prominence of the suture at the apical end. The nuts are imperfectly sealed and slightly astringent, but of very good flavor."

42042. "*Livingston.* Thomson orchard, Honeoye Falls, N. Y. Tree C–17. A vigorous, spreading, and symmetrical tree standing first in the third row from the corner, next to the highway and the spruce hedge. Grown from seed obtained from a tree in Rochester and planted in 1886 by Mr. Thomson where the tree now stands. The tree bore a good crop in 1915. The nuts are of good size and form, well sealed, thin shelled, the kernels plump and of good flavor, though somewhat astringent. Height from 28 to 30 feet and circumference at breast height 54½ inches. Maturity, October 10 to 20, 1915."

42043. "*Thomson.* Thomson orchard, Honeoye Falls, N. Y. Tree D–14. A vigorous, symmetrical, low-headed, and late-growing tree in the Thomson orchard, grown from the same lot of seed as B–16 [S. P. I. No. 42041] and C–17 [S. P. I. No. 42042], etc. In 1915 it bore a heavy crop of large nuts which became the favorite of Mr. Thomson's daughter. The nuts are of good size and form, easy to crack, fairly plump meated, of good flavor, but slightly astringent. In 1915 the crop matured from October 10 to 22."

42044. "*Leland.* Thomson orchard, Honeoye Falls, N. Y. Tree L–15. A double but rather small and not overvigorous tree, bearing the largest nuts of any tree in the orchard. The nuts are a little thick shelled, but rounded out in form; the kernels are plump, sweet, but fairly astringent. Height estimated to be 20 feet and circumference of each trunk at breast height 20½ and 21¼ inches, respectively. The nuts matured from October 15 to 22, 1915."

42045. "*Holden.* The parent tree of this variety stands on the lawn of Mr. Jacob Cosmon, of Hilton, N. Y., about 2 miles from the village and a slightly greater distance from the shore of Lake Ontario. It has been known by Mr. Cosmon for about 35 years, and he estimated it to be between 50 and 60 years of age. Owing to the fact of its being crowded on three sides by other trees it has never borne heavily, but by Mr. E. B. Holden, a son-in-law of Mr. Cosmon, who is the introducer and in whose honor it has been named, it is reported to bear frequently a bushel or more of nuts. Nuts from this tree have been exhibited at various fairs and fruit shows for some 10 years and repeatedly have been given very high rating. The nuts are above medium size, bright colored, thin shelled, and have plump kernels rich in oil and of sweet flavor. They are, however, somewhat objectionable because of an astringency of pellicle."

42046. Zizphus jujuba Mill. Rhamnaceæ. **Jujube.**

(*Ziziphus sativa* Gaertn.)

From Shorter, Ala. Presented by Mr. Charles G. Howard. Received March 4, 1916.

"Cuttings obtained from Mr. J. W. Burton, Shorter, Ala."

42047. Cymbopetalum penduliflorum (Dun.) Baill. Annonaceæ. **Sacred ear-flower.**

From Guatemala. Presented by Mr. Stuart K. Lupton, American consul, city of Guatemala. Received March 7, 1916.

"*Sacred ear-flower*, or *orejuela*, as it is locally known. These petals and seeds were obtained through the kindness of Mr. R. S. Anderson, an American resident in Coban, Guatemala. In his letter he says, 'I am sorry to say we have not been able to find the seed. The owners of the trees or tree say the birds eat the seed, so they are hard to get.'" (*Lupton.*)

42048. Cymbopogon coloratus (Hook.) Stapf. Poaceæ. **Lemon grass.**

From Suva, Fiji Islands. Presented by Mr. C. H. Knowles, Superintendent of Agriculture. Received February 21, 1916.

"This species is not now in commercial use. It seems proved that it will produce oil not inferior to that of *Cymbopogon citratus*, the lemon oil of commerce. Lemon oil is used in America in the preparation of ionone, or artificial violet, for perfuming soap and also in the preparation of furniture polish; in India it is used in domestic medicine and as a kitchen herb in sauces and curries." (*Chase.*)

42049 to 42051.

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni. Received February 29, 1916.

42049. Phaseolus vulgaris L. Fabaceæ.

"Forma *tawana*. The *taguana*, or giant bean of the Guaranis, which is only a form of the common bean, is perhaps the typical form from which the bean arose. But if it is botanically only a form, from the agricultural point of view it is more than a variety. This bean has been cultivated by the Guaranis certainly since a remote antiquity. The most notable peculiarity of this variety is its enormous growth. It has a long shoot, which grows to 15 or 20 meters, so that in a wood it climbs to the tops of high trees. Cultivated without branching, it develops less but yet produces abundantly, the production keeping step with the development, so that a well-developed plant will produce up to 10 kilos of clean seed." (*Bertoni, Agronomia, vol. 5, pp. 326–327. 1913.*)

42050 and 42051. Cacara erosa (L.) Kuntze. Fabaceæ. Yam bean.

(*Pachyrhizus angulatus* Rich.)

See S. P. I. No. 41712 for previous introduction and description.

42052 to 42054. Dioscorea spp. Dioscoreaceæ.

From Cristobal, Canal Zone. Tubers presented by Mr. O. W. Barrett. Received March 2, 1916.

42052 to 42054—Continued.

42052. DIOSCOREA sp. **Manawá yam.**

"A very peculiar yam which appears to be distinct from the white yampee, the *Mapues* yampee of Porto Rico, or any of the wild sorts I have ever seen. We are calling it the *Manawá* yam, from the plantation where I am trying it near Colon. About nine months ago I obtained two small roots from a Panaman, who admitted they were not commonly cultivated even in Panama. They may be native to the Darien region. From one hill (planted in April, I believe), we harvested some 6 or 8 pounds in November, and the vines are still (December 24) producing. It is a heavy yielder and two or three months earlier than the *Dioscorea alata* or *D. sativa* types. It is slightly sweet and has a flavor all its own, and practically no rag. The size and shape impress me strongly. The skin is of a distinct type, potatolike. This, with the attractive shape, individual size, and mealiness, will, I believe, make the *Manawá* very popular." (*Barrett.*)

"When baked the skin is bitter and can not be eaten." (*R. A. Young.*)

See S. P. I. No. 39705 for previous introduction.

For illustrations of yams, see Plates III and IV.

42053. DIOSCOREA TRIFIDA L. f. Dioscoreaceæ. **White yampee.**

"From Bracho plantation, near Colon. Second crop. Probably *Dioscorea trifida*." (*Barrett.*)

"The quality is excellent, the flesh being white and mealy." (*R. A. Young.*)

For an illustration of the tubers of the white yampee, see Plate V.

42054. DIOSCOREA sp. Dioscoreaceæ. **Yampee.**

"From Bracho plantation, near Colon. Second crop." (*Barrett.*)

"The quality is fair; the flesh is very slightly pink and is rather firm." (*R. A. Young.*)

The tubers of this introduction were received mixed with those of the *white yampee*, S. P. I. No. 42053, but on account of the marked difference in appearance and quality they were separated and given different numbers.

For an illustration of this form of yampee, see Plate VI.

42055 and 42056.

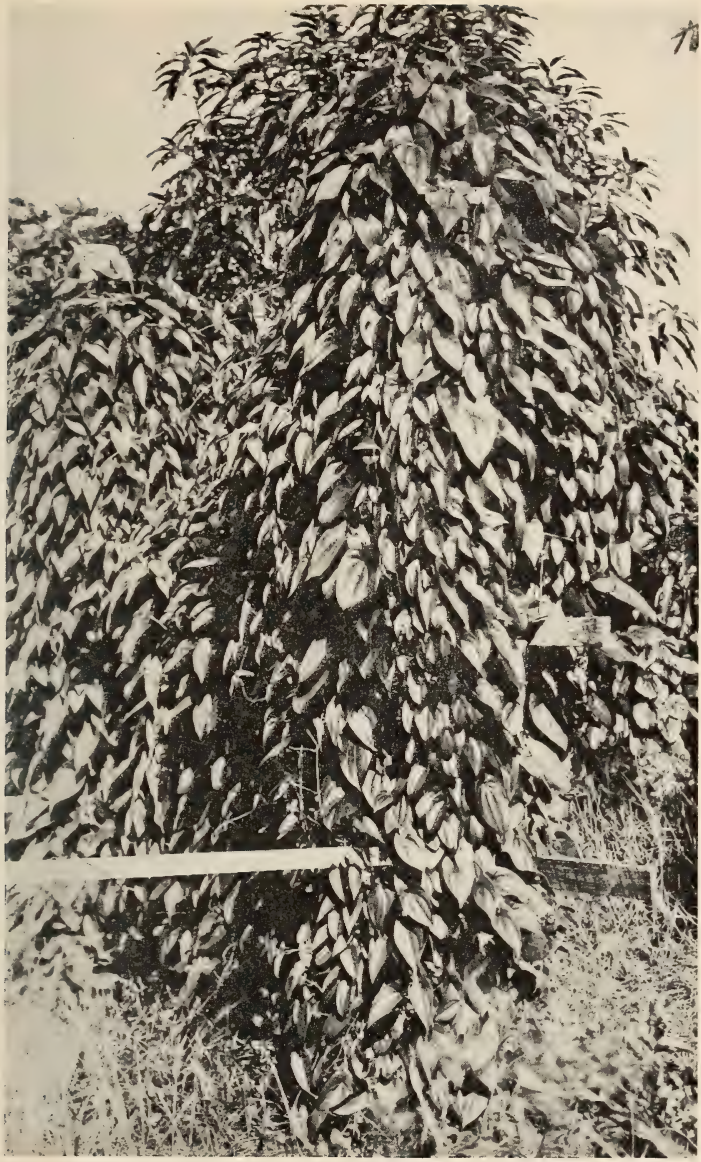
From Joinville, Brazil. Presented by Mr. Jean Knatz. Received March 3, 1916.

42055. CARICA PAPAYA L. Papayaceæ. **Papaya.**

A rapid-growing fruit tree, reaching a height of 25 feet in 10 months and bearing numerous melon-shaped fruits on the trunk. Good varieties are deliciously sweet, with a characteristic flavor. They are relished as a breakfast fruit and are easily digested, as they contain a powerful papain ferment.

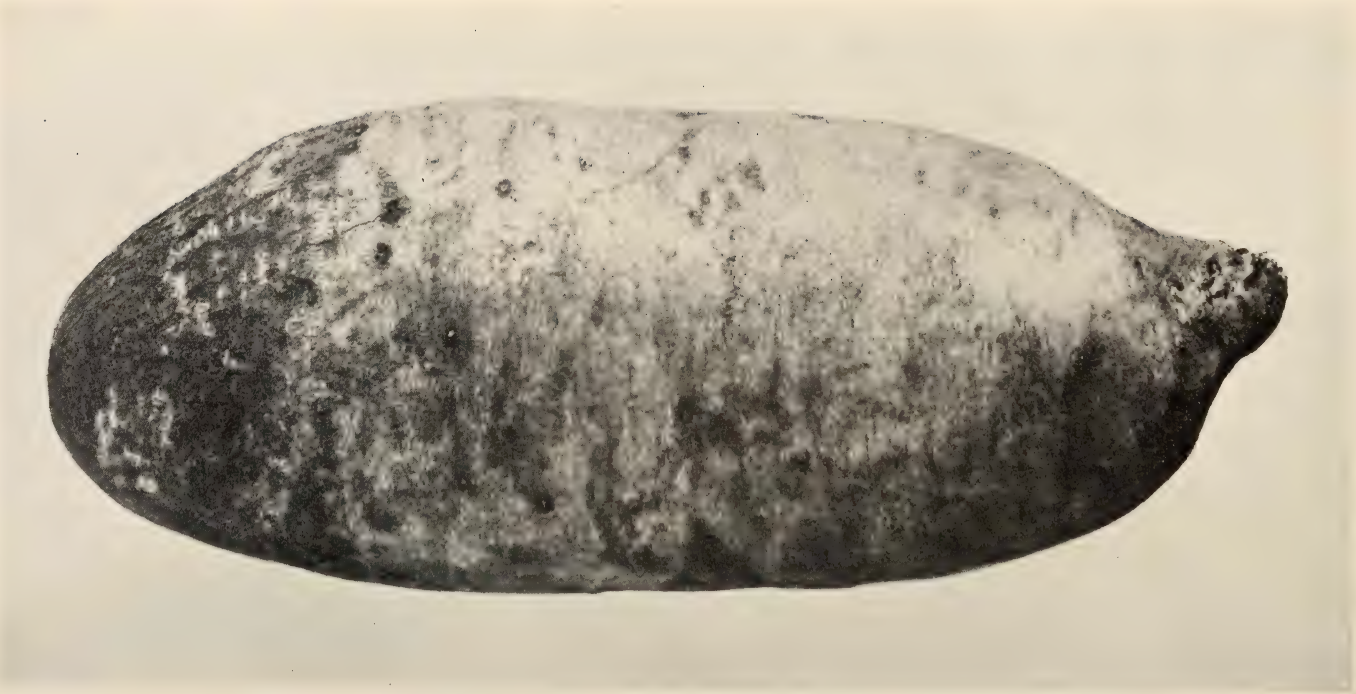
42056. PHASEOLUS CALCARATUS Roxb. Fabaceæ. **Rice bean.**

"The plant is strictly an annual and half twining in habit. Planted in rows the different varieties grow 12 to 30 inches high and produce vining branches 3 to 6 feet long. The leaves closely resemble those of the common bean, but not infrequently are three lobed. The flowers are bright yellow, produced in racemes of 10 to 20. The pods are smooth,



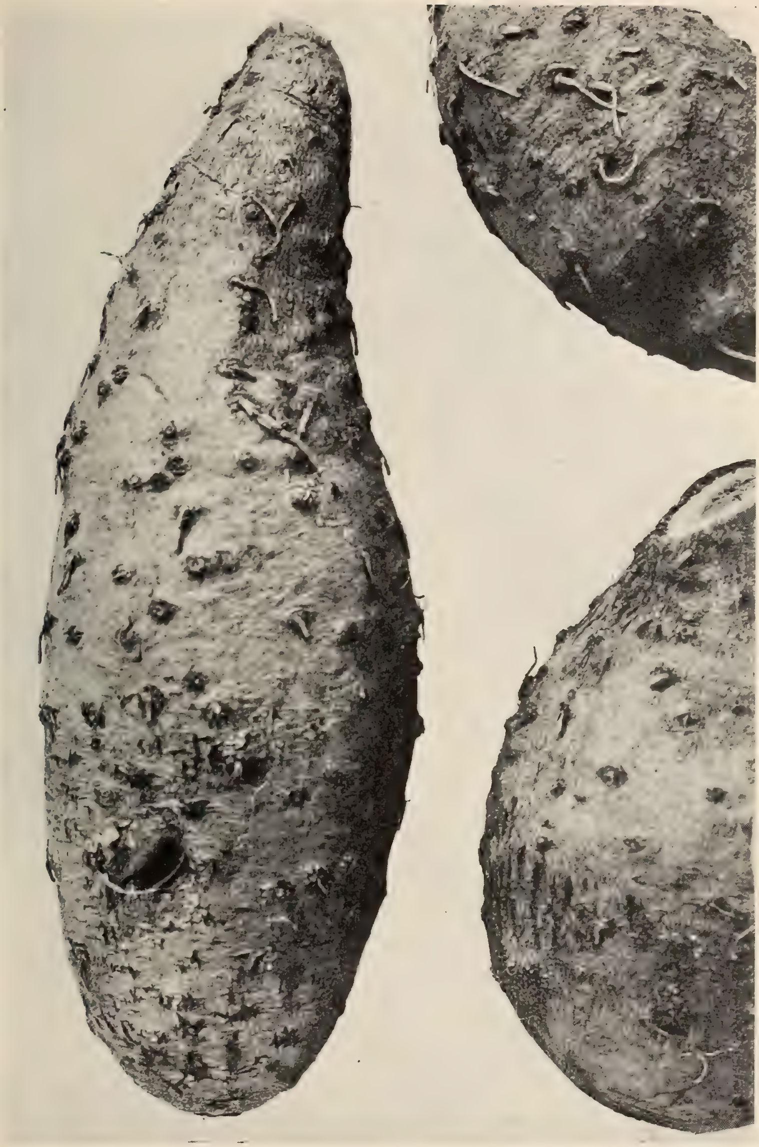
THE DAGO HAYA, THE BEST TROPICAL YAM, FROM THE ISLAND OF GUAM, GROWING AT MIAMI, FLA. (DIOSCOREA ALATA L., S. P. I. NO. 39705.)

The true yams constitute an important group of starchy tuberous-rooted food plants and should not be confused with certain varieties of sweet potatoes that are called yams in our Southern States. They should be grown and used largely in those warm regions of the world where they will thrive and into which people demanding white potatoes have to import them from cooler regions. In the island of Trinidad the production of the yam, cassava, taro, and other starchy root crops has been so increased during the war that the necessary demands on the wheat supply of the world and on transportation for carrying flour and potatoes to that island have been materially reduced. (Photographed by Edward Simmonds, October 20, 1916; P20115FS.)



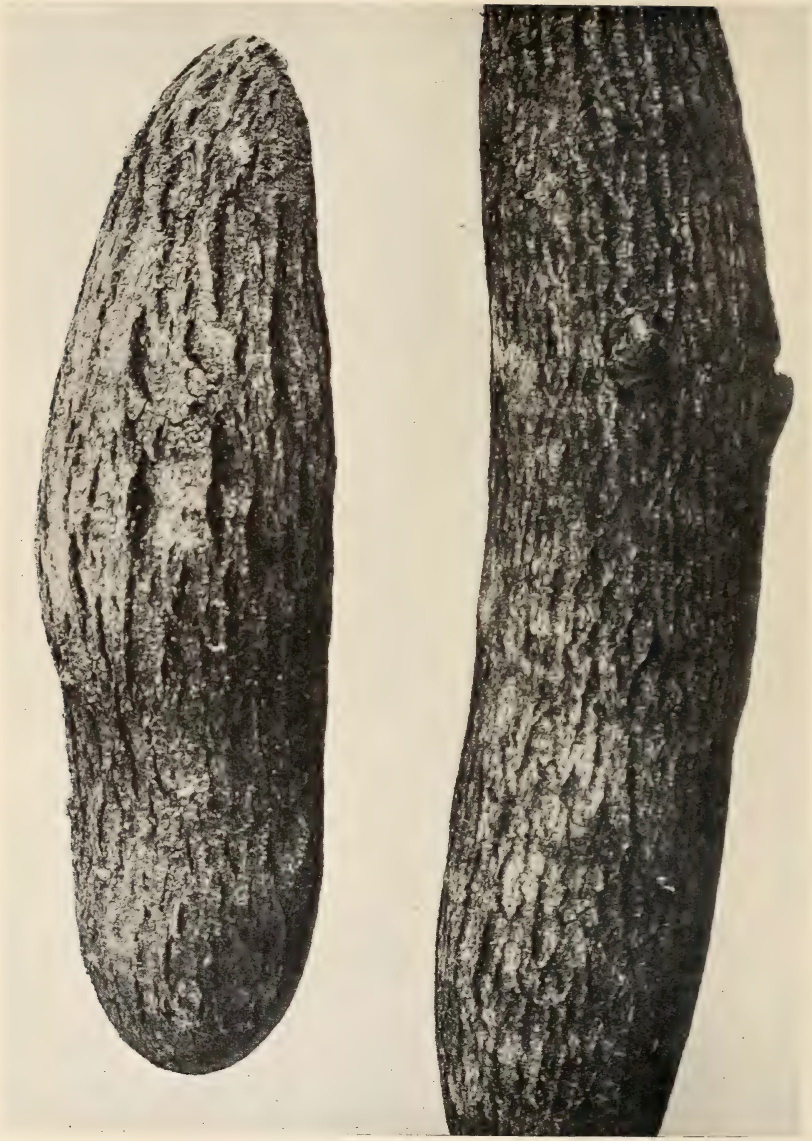
THE MANAWÁ YAM, FROM THE REPUBLIC OF PANAMA. (DIOSCOREA SP., S. P. I. NO. 42052.)

The mealy whiteness of the flesh when cooked, the smoothness of the skin, and the shape and size of this yam make it an extremely desirable variety for table use. The first introduction did not succeed at the place where tested, but the unusually attractive appearance and excellent qualities of this variety make it worthy of the extensive trials in Florida which are now contemplated. (Photographed, natural size, by E. L. Crandall, January 17, 1916; P19425FS.)



TUBERS OF THE WHITE YAMPEE, A VARIETY OF YAM GROWN IN THE CANAL ZONE. (DIOSCOREA TRIFIDA L. F., S. P. I. NO. 42053.)

This yampee is of fine quality and will furnish the South with another food equal to the best potatoes if it can be grown there successfully. When baked or when peeled and boiled it resembles a mealy potato and approximates it in food value, though slightly lower in protein. (Photographed, natural size, by E. L. Crandall, March 2, 1916; P19482FS.)



ANOTHER FORM OF YAMPEE, FROM THE CANAL ZONE. (DIOSCOREA SP., S. P. I. No. 42054.)

The superior keeping quality in the Tropics of the true yam as compared with the cassava or the sweet potato is a very important factor. These tubers were reported to be of the same variety as those shown in Plate V, though, as will be seen, they are very different in appearance. They illustrate the fact that this important group of food plants deserves more serious consideration from horticulturists than it has hitherto received. (Photographed, natural size, by E. L. Crandall, March 2, 1916; P19481FS.)

42055 and 42056—Continued.

slender, falcate, straw colored, brownish or blackish, 3 to 4 inches long, and burst open readily at maturity. Though very productive of seed, the vining habit of the plant, as well as the shattering, makes it difficult to harvest." (*C. V. Piper, Bulletin of the U. S. Department of Agriculture, No. 119, p. 13.*) For further information this bulletin should be consulted.

See S. P. I. Nos. 33098 and 38441 for previous introductions.

42057. Prunus bokhariensis Royle. Amygdalaceæ. **Plum.**

From Simla, Punjab, India. Presented by Mr. E. Long, superintendent, Viceregal Gardens. Received March 7, 1916.

"Commonly known as *Alloobokhara.*" (*Long.*)

Seeds sent in reply to the following request: "We are inclosing a photograph of a specimen of Prunus in the Kew Herbarium, England, which came originally from Simla, India. This was labeled *Prunus bokhariensis*, but we do not know for certain if this is authentic. It seems to have more than one common name and is known as *Alucha* and *Aru bokhara.* It was found at Simla apparently in what is there known as the Annandale Garden and is therefore known as the *Annandale plum.* It is also growing in the Service Club Compound at Simla and in the Kakheri Compound. This plum somewhat resembles *Prunus triflora* (*P. salicina*), but we believe it to be a distinct species, and it appears to be of much value in breeding work."

42058 to 42065.

From Keijo, Chosen (Korea). Presented by Miss Katherine Wambold. Received February 28, 1916. Descriptive notes by Miss Wambold.

42058. Chaetochloa italica (L.) Scribn. Poaceæ. **Millet.**
(*Setaria italica* Beauv.)

"*Chō*, ground and made into *dok*, solid dumpling, coarser dumpling, or cooked as *pop*, that is, as rice is cooked."

42059. Soja max (L.) Piper. Fabaceæ. **Soy bean.**

"*Kong.* Cooked, pressed, hung all winter to rafters, then soaked in a brown liquid called *chang*, used as a salty sauce on food. It is parched and then eaten. A few partly cooked grains are often scattered in the rice, as we use raisins in a rice pudding."

42060. Holcus sorghum L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"*Soo soo.* Ground and made into flour for *dok*, a solid bread like a fallen dumpling; also cooked as *pop*, boiled rice."

42061. Hordeum vulgare coeleste L. Poaceæ. **Barley.**

"*Po ree*, cooked as rice is cooked; parched and made into coffee; ground into flour and made into *yot*, looking like molasses candy; sprouted and ground, mixed with rice, to make *comju*, a sort of rice soup."

42062. Perilla frutescens (L.) Britton. Menthaceæ. **Perilla.**
(*Perilla ocymoides* L.)

"*Tui gai.* Oil is extracted from the seeds and used on the paper which covers the mud floors. It is used also on skin shoes."

42063. Phaseolus angularis (Willd.) W. F. Wight. Fabaceæ. **Adzuki bean.**

"*Pat.* Used for flour and made into *dawk* (*dok*), a substance like a solid dumpling; also as porridge."

42058 to 42065—Continued.

42064. PHASEOLUS AUREUS Roxb. Fabaceæ. **Mung bean.**

"*Nok too.* Ground and made into *mook*, a blancmange; also cooked as a vegetable."

42065. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

"*Meal* is the Korean name. Made into flour used for *dok*, a substance like fallen dumpling; also for *cooksoo*, i. e., vermicelli."

42066. BAMBOS GUADUA Humb. and Bonpl. Poaceæ. **Guadua.**
(*Guadua angustifolia* Kunth.)

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni. Received February 2, 1916.

"In connection with guaduas I must notice the *guadua* itself, the most indispensable plant of all New Granada after the plantain, the cane, and maize. It might be called the lumber tree, for it supplies all our fencing (except walls of brick, rammed earth, and rarely of stone), also the woodwork of most houses, and whatever is made of boards at the North. It is an enormous grass, like the bamboo of the eastern Tropics, growing, however, to a less height, only 30 to 40 feet. The slender foliage is of inconceivable beauty, comparing with that of other trees as ostrich feathers do with goose quills. The stem is about 6 inches in diameter, with joints about 20 inches apart. The thickness of the wood is nearly an inch. When poles or slats are wanted, the stem is split into four, six, or eight parts. For boards for the top of a coarse table, bench, or bedstead, it is opened and flattened out, splitting almost at every inch of width, but not coming entirely apart. For a dish, candle case, grease pot, or extemporaneous vessel for carrying drink to a company of hunters or laborers, it is cut off just below the partition. Such a receptacle is called a 'tarro.' Tarros of double capacity are made for bringing the domestic supply of water for a family by taking a piece two joints long, with a septum at each end and one in the middle. A hole is made in the upper and middle septa, and if they be used for carrying molasses a bung can be put in or an orange used for a stopper. Bottles of a single joint are used for holding castor oil, etc. In short, the uses of the *guadua* are innumerable. The *guadua* starts from the ground with the full diameter, or nearly so, but the joints are at first very short. Some trees send out branches, and they are long, straggling, and terribly thorny. Others grow with a diameter of only 2 inches and make good poles for bringing down oranges, every one of which has to be torn from the tree, or it decays without falling. The cavities of the *guadua* often contain water. It is erroneously believed that the quantity increases and diminishes with the phases of the moon. I must state one other thing about the *guadua* which is unusual in the vegetable kingdom here, but very common at the North. It is apt to take entire possession of the ground on which it grows. Now a square mile covered with the same species, say a pine, an oak, or the beech, an acre covered with the same species of grass, or whortleberry, or other plant is no uncommon thing at the North, but in the Tropics it is quite different. Plants are not gregarious here, still less exclusive. I have seen the guava grow in natural orchards where most of the trees in a considerable space were Psidium, but even this is rare, and in general you can not expect, where you have found a plant you want, to find others of the same species near it. If I wish to find a second lime tree, for instance, it is of no more use to look in the neighborhood where I found the first than in any other. But a 'guadual' is a considerable space, almost always near a stream, where scarce the smallest intruding plant is permitted. The *guadua* might be cultivated to great profit, but I never knew of but one attempt at it. The flower and seed are so rare that few botanists have ever seen it." (*Holton, New Granada, pp. 109, 110.*)

42067. CERCIDIPHYLLUM JAPONICUM Sieb. and Zucc. Trochodendraceæ.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received February 7, 1916.

"A deciduous tree of the largest size, often 100 feet high in its native state, with pendulous branches and a spirally twisted furrowed trunk. The trunk is sometimes solitary and 3 to 4 feet through, but more often the tree is made up of a group of several smaller stems. Leaves broadly ovate or heart shaped, 2 to 4 inches long. The male and female flowers are borne on separate trees, but neither possesses any beauty. This tree for a long time was thought to be confined to Japan, where it is the largest of deciduous trees, reaching its finest development in the island of Yezo; but Wilson found it in China in 1910. One tree, still living, but with its top fallen away, he found to be 55 feet in girth of trunk. The timber is light, straight grained, and yellowish, and is highly valued. The finest trees I have seen in Europe are in the Imperial Garden at Sans Souci, near Berlin, where there was, in 1908, a singularly elegant tree 30 feet high, with slender, spreading, arching branches. It succeeds equally well in the Royal Garden at Hanover. Still finer trees, but of denser habit, are in the Arnold Arboretum, Massachusetts, and in Mr. Thayer's grounds at Lancaster in the same State. It evidently needs a continental climate. At Kew, where it was introduced in 1881, it still remains a mere shrub. The generic name refers to the resemblance of the leaves to those of the Judas tree (Cercis)." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 332.*)

42068. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From New Orleans, La. Presented by the J. Steckler Seed Company. Received February 26, 1916.

Round, green.

42069. LUFFA ACUTANGULA (L.) Roxb. Cucurbitaceæ. **Loofah gourd.**

Secured by Mr. Frank N. Meyer, of the Bureau of Plant Industry, from Mr. Moy Auk, Kenilworth Avenue, Washington, D. C., March 9, 1916.

"A very good vegetable, much liked by the Chinese."

"This is a much smaller and apparently earlier variety than we have in the South." (*D. N. Shoemaker.*)

42070 and 42071. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

From State College, N. Mex. Presented by Mr. Fabian Garcia, New Mexico College of Agriculture and Mechanic Arts. Received March 7, 1916.

42070. "No. 9. This strain is proving to be more early and prolific and has a more shapely pod than the other strains." (*Garcia.*)

42071. "No. 11. This strain is almost as good as No. 9 [S. P. I. No. 42070], but it is not quite as prolific." (*Garcia.*)

42072. FRAGARIA CHILOENSIS (L.) Duchesne. Rosaceæ. **Strawberry.**

From Chile. Presented by Mr. Thomas W. Voetter, American consul, Antofagasta, who received these seeds from the American consular agent at Arica. Received March 8, 1916.

"These seeds were collected by Mr. H. A. P. Schumacher, of Tacna, at Pistala in the Department of Tarata, Province of Tacna, Chile, located 70° 6′ W. and 17° 28′ S., at 2,843 meters (about 9,470 feet) elevation above sea level. The plants are grown by Indians (a mixture of Peruvians and Bolivians), and the fruit is of medium size and of light red-brown color, ripening in November." (*Voetter.*)

42073. MYRIANTHUS ARBOREUS Beauv. Moraceæ.

From Loanda, Angola, Africa. Presented by Mr. J. Gossweiler. Received February 18, 1916.

Var. *chilnango.*

42074. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

From Barcelona, Spain. Presented by Mr. Carl Bailey Hurst, American consul general. Received March 7, 1916.

"Spanish sweet pepper known to Spanish agriculture and industry as *Pimento dulce morrón.* This seed was obtained especially for this consulate general from the region in this consular district where these peppers are most largely grown. It is said to be of the highest quality." (*Hurst.*)

42075. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

From Buitenzorg, Java. Presented by the Department of Agriculture. Received March 8, 1916.

42076 to 42080. LATHYRUS spp. Fabaceæ.

From Utrecht, Netherlands. Presented by the director, Botanic Garden. Received February 2, 1916.

42076. LATHYRUS LATIFOLIUS L. **Everlasting pea.**

"This is the common perennial pea and one of the hardiest and most easily cultivated species, thriving almost anywhere, even among flags and bowlders. A rampant grower, it is a good trellis plant, and is adapted as a cover to wild, rough places, as a rock garden, where it scrambles over bushes and stones. It succeeds in shade and grows rapidly, but, like all species of Lathyrus, it is impatient of removal, owing to the size and length of its roots. It is not fragrant. Its varieties are not clearly defined." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1825.*)

See S. P. I. Nos. 17772 and 28480 for previous introductions.

42077. LATHYRUS ODORATUS L. **Sweet pea.**

See S. P. I. Nos. 13306 to 13312 and 17774 for previous introductions.

42078. LATHYRUS SYLVESTRIS L. **Flat pea.**

"Inferior ornamentally to other perennials; sometimes mentioned as a forage plant and for plowing under in a green state as a fertilizer. Grows well on poor, unimproved sandy soil and is unaffected by frosts and droughts. For garden cultivation it may be sown in a seed bed and

42076 to 42080—Continued.

transplanted when of suitable size. Its seeds in the wild state are said to be to some degree unhealthful, but in the cultivated form this quality has been bred out." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1825.*)

See S. P. I. Nos. 32415 and 40672 for previous introductions.

42079. LATHYRUS SYLVESTRIS L. **Flat pea.**

"Var. *wagneri*." This so-called variety, claimed to have been produced by a German named Wagner, seems not to be different from the ordinary *Lathyrus sylvestris*.

See previous introduction [S. P. I. No. 42078] for description.

42080. LATHYRUS VERNUS (L.) Bernh. **Spring vetchling.**

"A compact, tufted plant, growing quickly in the sun or a little shade; best in deep, sandy loam, in a sheltered position; hardy." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1827.*)

See S. P. I. Nos. 22555 and 40322 for previous introductions.

42081. MALUS BACCATA (L.) Moench. Malaceæ.
(*Pyrus baccata* L.) **Siberian crab apple.**

From Castlecomer, Ireland. Cuttings presented by Mr. I. Proctor, Ballyhemon House. Received March 20, 1916.

"A fine variety of Siberian crab which produces fruit from 1½ to 2 inches long and from one-half to three-fourths of an inch in diameter." (*A. L. T. Proctor, in letter of February 7, 1916.*)

42082. PUYA CHILENSIS Molina. Bromeliaceæ. **Puya.**

From Lima, Peru. Presented by Dr. A. Weberbauer. Received March 13, 1916.

"Seeds of one of the most interesting plants of the Peruvian Cordilleras, namely, of the giant bromeliad. I collected the seed at Capaya, Department of Apurimac, Province of Aymaraes, at an elevation of 4,000 to 4,100 meters above sea level in a region where frosts and snowfalls are abundant. The plant should, therefore, perhaps not be cultivated in a greenhouse, but requires only protection against sharp frosts and must naturally receive much light. In the vicinity of Capaya the plant is called *titanca*. Heretofore I have known this plant only from the Cordilleras between 9° and 10° south and have described and figured it in my book, Die Pflanzenwelt der Peruanischen Anden." (*Weberbauer.*)

"This is one of the most striking of our bromeliaceous plants, cultivated in a cool stove of the Royal Gardens, Kew. The stem, or caudex, has now attained a height of 4 feet, independent of the leaves, which are from 3 to 4 feet in length, spreading in all directions, the lower ones being reflexed. These leaves would render the plant admirably suited to the formation of fences, in the nature of the spinous margins; for the upper half of the leaf has all the spines directed forward towards the apex, presenting a great obstacle to intrusion of man or beast in that direction, whilst those lower down the leaf (longer and stronger, too) have their curvature downwards, so that if man or animal is so bold as to make his way partially through, the decurved spines would prevent his retracing his steps with impunity. The compound spike of flowers upon the columnlike, perfectly straight peduncle is remarkable for its size, the large dull yellow (but inclining to green) flowers and the copious bracteas turning brown or black in age. This plant is called *Cardon* and *Puya* in Chile, where the soft substance of the stem is used for corks and bungs; the flowers yield a remedy for hernia, and the Indians use the spines of the leaves for fishhooks." (*Curtis's Botanical Magazine, vol. 9, pl. 4715.*)

42083. PERILLA FRUTESCENS (L.) Britton. Menthaceæ. **Perilla.**

(*Perilla ocymoides* L.)

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Received March 13, 1916.

See S. P. I. No. 42062 for previous introduction and description.

42084. ARALIA CORDATA Thunb. Araliaceæ. **Udo.**

From Yokohama, Japan. Roots purchased from L. Boehmer & Co. Received March 13, 1916.

"Japanese *Nakate White*, from Kanagawa Ken." (*Boehmer & Co.*)

42085. GARCINIA EPUNCTATA Stapf. Clusiaceæ.

From Mount Coffee, Liberia. Presented by Mr. Henry O. Stewart. Received March 15, 1916.

"A wild fruit which grows on very large trees, 20 to 30 feet high." (*Stewart.*)

42086. NEPHELIUM LAPPACEUM L. Sapindaceæ. **Rambutan.**

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received March 15, 1916.

"*Ramboetan atjeh matjan.* A tree up to 25 meters high. A fruiting tree which is an ornament of the Javanese village groves because of the pretty, often more or less dense, leaf crown, decorated on the outside with the numerous, long-stemmed scarlet fruits the size of a hen's egg. Arillus white, very juicy, more or less sour." (*Koorders and Valeton, Boomsoorten van Java.*)

"One of the most delicious and showy fruits of the Dutch East Indies, closely related to the litchi." (*Fairchild.*)

See S. P. I. Nos. 13571, 17515, and 34494 for previous introductions with descriptions.

42087 to 42136.

From Melbourne, Victoria, Australia. Presented by Mr. A. E. V. Richardson, agricultural superintendent, Department of Agriculture. Received March 8, 1916. Notes by Mr. Richardson.

42087. AVENA ORIENTALIS Schreb. Poaceæ. **Oats.**

Black Tartarian.

42088 and 42089. AVENA SATIVA L. Poaceæ. **Oats.**

42088. "*Ruakura* oats raised in New Zealand by Primrose McConnell and having the reputation of being rust resistant."

42089. "*Clydesdale.*"

42090 and 42091. AVENA STERILIS L. Poaceæ. **Oats.**

42090. "*Algerian.*" **42091.** "*Calcutta.*"

42087 to 42136—Continued.

42092 to 42101. HORDEUM spp. Poaceæ. **Barley.**

42092 to 42095. HORDEUM DISTICHON PALMELLA Harlan.

42092. Subvariety *erectum.* "*Goldthorpe.* Feed barley."

42093 to 42095. Subvariety *nutans.*

42093. "*Pryor.* Two-rowed malting barley."

42094. "*Kinver.* Two-rowed malting barley."

42095. "*Archer.* Two-rowed malting barley."

42096. HORDEUM VULGARE PALLIDUM Seringe.

Subvariety *coerulescens.* "*Roseworthy Oregon.* Six-rowed field barley, produced by Prof. Perkins, of Roseworthy College, South Australia."

42097. HORDEUM DISTICHON PALMELLA Harlan.

Subvariety *nutans.* "*Golden grain.* Two-rowed malting barley."

42098. HORDEUM VULGARE L.

"*Square head.* Six-rowed field barley, produced by Prof. Perkins, of Roseworthy College, South Australia."

42099 and 42100. HORDEUM VULGARE PALLIDUM Seringe.

42099. Subvariety *coerulescens.* "*Short head.* Six-rowed field barley produced by Prof. Perkins, of Roseworthy College, South Australia."

42100. Subvariety *coerulescens.* "*Cape.* Two-rowed malting barley."

42101. HORDEUM VULGARE TRIFURCATUM (Schlecht.) Beaven.

"*Skinless.* Feed barley."

42102 to 42136. TRITICUM spp. Poaceæ. **Wheat.**

"Nos. 42102, 42105 to 42109, 42111 to 42114, 42131, and 42134 are new crossbred varieties which are largely grown in the various States of the Commonwealth. Of very high milling value, and produce flour possessing a very high water-absorption value and give well-piled loaves. The rest are, for the most part, selections isolated by various plant breeders and agriculturists from acclimatized foreign varieties, and from old types of wheat that have been growing in the States for some forty years."

42102 to 42114. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

42102. *Federation.*

42103. *Federation* (hard selection).

42104. *Federation* (white selection).

42105. *Currawa.*

42106. *Commonwealth.*

42107. *Major.*

42108. *Nardoo.*

42109. *Canberra.*

42110. *Crossbred 28.*

42111. *Florence.*

42112. *Cedar.*

42113. *Bob's.*

42114. *Comeback.*

42115. TRITICUM DURUM Desf.
Huguenot.

42087 to 42136—Continued.

42116 to 42136. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

42116. *Penny.*
42117. *Warden.*
42118. *Marshall's No. 3.*
42119. *Dart's Imperial.*
42120. *Yandilla King.*
42121. *College Eclipse.*
42122. *Correll's No. 3.*
42123. *Avoca.*
42124. *Wallace.*
42125. *Triumph.*
42126. *Thew.*
42127. *Purple Straw.*
42128. *College Purple Straw.*
42129. *Gluyas* (bearded).
42130. *Gamma.*
42131. *Bayah.*
42132. *Viking.*
42133. *White Tuscan.*
42134. *Zealand Blue.*
42135. *Bunyip.*
42136. *Firbank.*

42137. ARRACACIA XANTHORRHIZA Bancroft. Apiaceæ. **Arracacha.**

From Kingston, Jamaica. Tubers presented by Mr. W. Harris, Hope Gardens. Received March 23, 1916.

"This common vegetable is a native of the Andes in South America, where it is cultivated between 5,000 and 7,000 feet altitude. It is a low parsniplike plant, producing large edible starchy carrot-shaped roots, the flavour of which has been compared to a combination of parsnip and potato. The plant will thrive in any good soil and is adapted only to the higher elevations, say from 4,500 to 6,000 feet. It is commonly cultivated as a vegetable at Bogota in Colombia up to 8,000 feet elevation." (*H. F. MacMillan, Handbook of Tropical Gardening, 2d ed., p. 234, 1914.*)

42138 to 42165. DIOSPYROS KAKI L. f. Diospyraceæ. **Kaki.**

From Okitsu, Japan. Cuttings presented by Prof. Ishiwara, Government Horticultural Experiment Station. Received March 8, 1916. Quoted notes by Mr. T. Kiyono, Semmes, Ala.

42138. "No. 28. *Marugaki.* Astringent. Hiroshima Province."

42139. "No. 29. *Giombo.* Astringent. Hiroshima Province."

42140. "No. 30. *Shimofuri.* Astringent. Hiroshima Province."

42141. "No. 31. *Koharu.* Sweet. Kumamoto Province."

42142. "No. 34. *Yotsu-myotan.* Sweet. Hiyogo Province."

42143. "No. 35. *Koharu.* Sweet. Oita Province."

42144. "No. 39. *Takura* (or *Sakushu-mishirazu*). Astringent. Oita Province."

42145. "No. 40. *Kumono.* Astringent. Okidzu Province."

42146. "No. 41. *Kiara.* Sweet. Okidzu Province."

42147. "No. 42. *Fuji.* Astringent. Okidzu Province."

42148. "No. 43. *Mishirazu.* Astringent. Okidzu Province."

42149. "No. 44. *Ama-yemon.* Sweet. Okidzu Province."

42150. "No. 45. *Koshu-hiyakume.* Astringent. Okidzu Province."

42151. "No. 46. *Yotsumizo.* Astringent. Okidzu Province."

42152. "No. 47. *Dojo-hachiya.* Astringent. Okidzu Province."

42153. "No. 48. *Tokuda-gosho.* Sweet. Okidzu Province."

42154. "No. 49. *Shiroto-damashi.* Astringent. Okidzu Province."

42138 to 42165—Continued.

42155. "No. 50. *Jiro.* Sweet. Okidzu Province."

42156. "No. 51. *Inayama.* Astringent. Okidzu Province."

42157. "No. 52. *Shiyogatsu.* Sweet. Okidzu Province."

42158. "No. 53. *Shimofuri.* Sweet. Okidzu Province."

42159. "No. 54. *Sanenashi.* Astringent. Okidzu Province."

42160. "No. 55. *Ama-hiyakume.* Sweet. Okidzu Province."

42161. "No. 56. *Ye-gosho.* Sweet. Okidzu Province."

42162. "No. 57. *Yashima.* Sweet. Okidzu Province."

42163. "No. 58. *Onihira.* Astringent. Okidzu Province."

42164. "No. 59. *Shiunshio.* Sweet. Okidzu Province."

42165. "No. 60. *Fuyu.* Sweet. Okidzu Province."

42166 and 42167.

From Yokohama, Japan. Procured from the Yokohama Nursery Company, through Mr. L. H. Dewey, of the Bureau of Plant Industry. Received March 18, 1916.

42166. CANNABIS SATIVA L. Moraceæ. Hemp.

"*Tochigi* hemp. The seed supply for sowing is very limited because farmers do not cultivate beyond their own local requirements, so unless contracted for early in the season no considerable quantity is obtainable. The best and most durable fishing nets are made of the Tochigi hemp, which are said to last for three years, while nets made of hemp produced elsewhere do not keep good half as long. The net manufacturer of Fujisawa, who supplies the nets all over Japan, uses the Tochigi hemp exclusively, and his make is esteemed as the very best in Japan. As to the length of fiber, it may depend upon the cultural method. For hemp production the seeds are sown broadcast and grown closely together, to make the stalks grow slender and higher. The stalks are gathered while they are quite green. For seedlings ample space is provided in order that they may spread out branches freely, and they are left in the field till the seed matures." (*S. Iida.*)

"*Tochigi* (pronounced to-ching′ee) hemp is regarded as the best fiber-producing hemp in Japan. It is cultivated most extensively in the Province of Tochigi, about 100 miles north of Yokohama. The slender tall stalks produce a fiber somewhat finer than the average Kentucky hemp. Although this is one of the most promising strains of foreign hemps it is not likely to give very satisfactory results in this country until after it has been acclimated by cultivation and selection for two or three generations." (*L. H. Dewey.*)

42167. ZEA MAYS L. Poaceæ. Corn.

Introduced for breeding experiments.

42168 to 42172. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Basse-Terre, Guadeloupe, French West Indies. Presented by Mr. Joseph O. Florandin, American vice consul. Received March 20, 1916.

Introduced for the office experiments.

42168. White.

42169. Large dark green.

42170. Large light green.

42171. Long light green.

42172. Small dark green.

42173 to 42176. Indigofera spp. Fabaceæ. Indigo.

From Buitenzorg, Java. Presented by the director, Department of Agriculture. Received March 15, 1916.

42173. Indigofera hirsuta L.

An annual species of indigo, native of Guinea, less esteemed for dye production than *Indigofera anil* L. and *I. tinctoria* L.

See S. P. I. Nos. 23726 and 37068 for previous introductions.

42174. Indigofera longeracemosa Boivin.

In Madagascar and Zanzibar this species, which is very distinct from both *Indigofera tinctoria* and *I. sumatrana*, is valued by the people beyond all the other species they grow, and they grow the following: (*a*) Chiefly *I. anil*, (*b*) less often *I. tinctoria*, (*c*) occasionally *I. sumatrana*, and (*d*), in the highlands of Madagascar, *I. arrecta*. (Adapted from *Watt, The Commercial Products of India, p. 662.*)

42175. Indigofera suffruticosa Mill.

A South American species cultivated in Burma, Indo-China, southern China, and Java.

See S. P. I. Nos. 24440 and 37391 for previous introductions.

42176. Indigofera sumatrana Gaertn.

This is the form of *Indigofera tinctoria* that was introduced from the East into the West Indies and is the *I. tinctoria* of Lunan. If, therefor, it be deemed necessary to give this plant a separate name and remove it from being one of the cultivated states of *I. tinctoria* L., then it will have to be called *I. sumatrana* Gaertn. In addition to India (where it is largely in use in the north from Bihar and Tirhut westward by north to the Punjab) it also occurs in tropical Africa and Formosa. It may be distinguished from the southern form of *I. tinctoria* by its leaflets, which are larger and ovate-oblong or oblong instead of obovate or suborbicular. The pods in *I. sumatrana* are also shorter, thicker, and blunter at the apex, and are usually more numerous and straighter than in the Madras form. (Adapted from *Watt, The Commercial Products of India, pp. 662–663.*)

42177 and 42178.

From Auckland, New Zealand. Presented by Mr. H. R. Wright, Avondale Nursery. Received March 17, 1916.

42177. Pittosporum fairchildi Cheeseman. Pittosporaceæ.

"This variety bears a striking resemblance to *Pittosporum crassifolium* [S. P. I. No. 41290], but is the more dense of the two, consequently better; it ripens its seed several months later; makes a splendid hedge and is good also as a shrub tree; height about 20 feet. This variety was discovered by the late Capt. Fairchild, on an island off the New Zealand coast. The seeds take a long time to germinate, and forcing them is of no use. Plants are tender when young and must be kept from frost; they are hardy when established." (*Wright.*)

42178. Amygdalus persica L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

"*Weeping* variety which will repeat from seed; best results obtained by budding them on standards, or they may be worked on low stocks; tie the bud up to a tall stake and top off at a given height. It is a very fine dessert peach." (*Wright.*)

42179. Platanus orientalis L. Platanaceæ. **Oriental plane tree.**

From Lahore, India. Presented by the superintendent, Government Agri-Horticultural Gardens. Received March 17, 1916.

"A deciduous tree of the largest size, in this country occasionally 80 to 100 feet high and 14 to 20 feet in girth of trunk. Native of southeastern Europe and Asia Minor; cultivated in England in the middle of the sixteenth century. The true oriental plane is comparatively rare in gardens, having been ousted by the more rapidly growing London plane, which is not so picturesque nor so pleasing as an isolated lawn tree. It is easily distinguished from *acerifolia* by its shorter, more rugged trunk and its deeper, often doubly lobed leaves. Few trees are longer lived than this. On the banks of the Bosporus there is a group of trees under which the knights of Godfrey de Bouillon on their way to the crusades are said to have been sheltered in 1096. Under a tree still living on the island of Cos in the Aegean Sea, its trunk 18 yards in circumference, tradition says that Hippocrates sat more than 400 years B. C. There is no direct evidence to support these stories, but they point to the perhaps unequalled longevity of the plane among European trees. In his account of fine British specimens Mr. Elwes gives first place to one in the palace gardens at Ely, planted by Bishop Gunning between 1674 and 1678. It is over 100 feet high and more than 20 feet in girth. A fine specimen at Kew, near the sundial and on the site of the famous seventeenth-century gardens of Sir Henry Capel of Kew House, has a trunk 15 feet in girth." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 203.*)

42180. Baryxylum dubium (Spreng.) Pierre. Cæsalpiniaceæ.
(*Peltophorum vogelianum* Walp.)

From Davie, Fla. Presented by Mr. Robert Werner, horticulturist, Davie Board of Trade. Received March 20, 1916.

Seeds of a large tree 50 to 60 feet high, broad and spreading, giving fine shade. A handsome ornamental tree. Flowers bright yellow with golden yellow anthers. Called *cana fistula* in Brazil, but this name properly belongs to another plant.

See S. P. I. No. 37901 for description.

42181 and 42182.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received March 18, 1916.

42181. Indigofera tinctoria L. Fabaceæ. **Indigo.**

"A blue dye is obtained from species of Indigofera, chiefly *Indigofera anil* (of the West Indies) and *I. tinctoria* (of India and Africa). Both are shrubby plants of the leguminous family and occur in a wild state in Ceylon up to about 2,000 feet. India and Java are almost the only indigo-producing countries. Owing partly to the unhealthiness of the operations in connection with its production, but chiefly to the introduction of synthetic indigo, the cultivation of the plant has in recent years been largely abandoned. Of late, however, the industry appears to have somewhat recovered, the natural indigo being preferred by many manufacturers to the artificial production. The best conditions for the profitable cultivation of the plant are a rich loamy soil with a free subsoil and a moist hot atmosphere; a temperature below 60° F. is unfavorable to the crop. The land being plowed and harrowed, the seed is sown in lines about 2 feet apart. The seed being small, 10 to 15 pounds

42181 and 42182—Continued.

is required to sow an acre. It germinates in three or four days, and about three months later the flowers appear, when the plants are ready for harvesting. The plants are usually cut down to within a few inches of the ground, tied up in bundles, and carried fresh to the factory. The stumps left in the ground will afterwards 'ratoon,' and two to four cuttings may be obtained from the same roots within the year. To produce the dye the whole plant is subjected to a process of fermentation and churning. The freshly cut bundles are placed in huge vats provided with a tap at the bottom; the top is weighted down with planks and water laid on so as to cover the whole. Fermentation sets in and is allowed to go on for 12 to 16 hours, being stopped when the leaves become a pale color. The liquid is run off by the tap into a second cistern and is kept constantly agitated by either wading coolies, who beat with paddles, or by a mechanical contrivance, for two or three hours, after which the indigo settles in the bottom in the form of bluish mud. This, after draining off the water, is put into bags which are hung to dry, being afterwards cut into squares and stamped and further dried for export. About 8 pounds of leaves will yield one-half ounce of indigo. Good cultivation yields an annual return of from 300 to 500 pounds of indigo per acre." (*MacMillan, Handbook of Tropical Gardening and Planting, pp. 450 and 451.*)

42182. Isatis tinctoria L. Brassicaceæ. Woad.

"*Isatis tinctoria*, the dyer's woad, is said to have been originally a native of southeastern Europe, from whence it has spread by means of cultivation and become naturalised in most parts of Europe as far north as Sweden, and also in some parts of Asia. It is a biennial, growing from 18 inches to 3 or 4 feet high, with a smooth straight stem, branches toward the top, the root leaves stalked, inversely egg shaped or oblong, and coarsely toothed, the upper ones narrow lance shaped. with prominent auricles at the base. The pods are rather more than half an inch long, broad, and very blunt at the top, but tapering to the base. Before the use of indigo became common among European dyers, the blue coloring matter called woad, obtained from this plant, was an article of great importance, and the plant was extensively cultivated; but the introduction of indigo has almost entirely superseded it, and it is now only grown to a limited extent and used chiefly by woolen dyers for mixing with indigo, in order to excite fermentation. It is generally prepared by grinding the leaves into paste, which is then carefully fermented in heaps and afterwards made into balls or bricks for sale. The use of woad as a dye dates from very early times. Dioscorides, Pliny, and others mention its use for dyeing wool; and Cæsar relates that the ancient Britons used it for staining their bodies, the word Britain being derived from the Celtic *brith* or *brit*, 'painted,' in reference to this custom." (*Lindley, Treasury of Botany, vol. 1, p. 628.*)

42183 to 42199.

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received March 20, 1916.

42183. Adenocarpus foliolosus (Dryand.) DC. Fabaceæ.

"The stalks in this species are thickly covered with small leaves, which give the whole plant an outré appearance; hence the name '*foliolosus*,'

42183 to 42199—Continued.

so happily hit off; many other peculiarities attend this charming shrub, of which its long deciduous bracteæ are not the least remarkable. It is a native of the Canary Islands, where it was found by Mr. Masson and introduced in 1779; if suffered to grow it will acquire a great height, become indeed too large for a small greenhouse, and more fit for a conservatory, for which it would appear to be a most desirable plant; it produces flowers abundantly during May and June, which are not only ornamental but deliciously fragrant. Strong-established plants usually produce perfect seeds, by which this shrub is increased; cuttings rarely succeed." (*Curtis's Botanical Magazine, vol. 11–12, pl. 426,* as *Cytisus foliolosus.*)

42184. BERBERIS sp. Berberidaceæ. Barberry.

Received as *Berberis vilmoriniana,* for which a place of publication has not yet been found.

42185. BERBERIS HOOKERI VIRIDIS C. Schneid. Berberidaceæ. Barberry.

"An evergreen shrub, 3 to 5 feet high, producing a dense thicket of erect, angled stems which branch near the top. Leaves in tufts, 1 to 3 inches long, one-half to 1 inch wide; leathery, dark green above, glaucous white beneath. Flowers two-thirds inch across, pale yellow. Berries narrow, black purple, often remaining on the plant until the following spring. Native of the Himalayas. This shrub has been so much confused with *Berberis wallichiana* that it is difficult to disentangle the histories of the two. The true *B. wallichiana* is probably not in cultivation; it differs from *B. hookeri* in the larger leaves (3 to 4¾ inches long) and especially in their veining; the veins branch out from the midrib, parallel with each other, but never reach the margin, becoming merged in a vein which runs parallel with it. In *B. hookeri* the veins fork near the margin, but do not merge into one another. *B. hookeri* flowers in April and May and as a rule is quite hardy. The only time I have known it to suffer much was during the trying winter of 1908–09, when it lost most of its leaves, and the upper portion of the stem was killed. Leaves uniformly bright green beneath. Although a marked characteristic of some plants, the white under surface of typical *B. hookeri* is not a wholly reliable distinctive character. I have seen young plants partly bright green and partly blue white beneath. The best way to increase this species and its varieties is by the seeds it so plentifully bears; they may be sown in shallow boxes or in pots and the young plants pricked out the following year into nursery rows. The type and the variety *viridis* are useful shrubs for planting in places where an evergreen is wanted that will keep fairly dwarf without pruning." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 243.*)

42186. CARAGANA ARBORESCENS REDOWSKI Bean. Fabaceæ. Pea tree.

"A remarkable shrub, with long, serpentine branches, which will sometimes grow for several years without dividing. It thus acquires a thin and open but not ungraceful habit and is altogether a striking plant. Whether the *Caragana redowski* mentioned by De Candolle in his Memoir of Leguminosæ, published in 1825, is the same as this is uncertain. It appears never to have been properly described. The plant is at Kew, but its history is not known." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 288.*)

42183 to 42199—Continued.

42187. Caragana microphylla Lam. Fabaceæ. **Altagana.**

"Native of north-central Asia from Siberia to China; introduced in 1789. It flowers in May and June and is readily distinguished from all other species by the number and small size of its leaflets, the smallest scarcely one-eighth inch long. It is a shrub of graceful habit, much wider than high (16 feet in diameter at Kew), the branches being long, slender, but little divided, and ultimately more or less pendent. Grafted on standards of *Caragana arborescens* it makes a small tree, but sucker growths from the stock are often troublesome. It is suitable as a specimen for a lawn." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 291.*)

42188. Cornus bretschneideri Henry. Cornaceæ.

"A species with the young wood of a blood-red color; leaves opposite, lanceolate-ovate, dark green above, glaucous beneath; fruits blackish blue. China." (*Kew Bulletin, 1900, p. 41.*)

42189. Hydrangea bretschneideri Dipp. Hydrangeaceæ.

"A deciduous shrub, 8 to 10 feet high, forming a sturdy bush, old bark peeling; young branches smooth. Corymbs flattened, 4 to 6 inches across, with a considerable number of large sterile flowers at the margins; these are three-fourths to 1¼ inches across, the three or four sepals rounded or obovate, white, afterwards rosy. The small, perfect flowers are dull white. Native of China; introduced from the mountains about Peking in 1882, by Dr. Bretschneider. Planted in a sunny position in good soil, this makes a really handsome shrub, flowering in June and July, perfectly hardy and always vigorous." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 624.*)

42190. Hydrangea xanthoneura wilsonii Rehder. Hydrangeaceæ.

"A deciduous shrub, 8 feet or perhaps more high, of loose, thin habit, sending out long slender branches. Leaves in threes, ovate or oval, with a short, slender point, dark green and smooth above, pale beneath. Inflorescence a flattish, corymbose panicle, 5 or 6 inches across, margined with creamy white, sterile flowers 1¼ inches across. Perfect flowers one-fourth inch across, dull white. Native of central China; introduced for Messrs. Veitch by Wilson about 1904. It is a shrub of elegant and distinct habit and with considerable beauty in flower. It has, perhaps, some affinity with *Hydrangea bretschneideri*, but is, as yet, imperfectly known in gardens." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 631.*)

"The variety differs from the species (which has bright reddish brown bractlets with the bark without lenticels and soon separating into thin flakes) in having the new bractlets of each year grayish yellow while those of the previous year are grayish or light brown and marked with pale lenticels and the young leaves slightly appressed pubescent beneath." (*Sargent, Plantae Wilsonianae, part 1, p. 27.*)

42191. Hedysarum esculentum Ledeb. Fabaceæ.

"An erect Siberian Hedysarum with yellowish white flowers. According to Gmelin, the root is eaten by the natives of Jakutsk.

42192. Hedysarum flavescens Regel and Schmalh. Fabaceæ.

A suberect branching Hedysarum with yellow flowers, closely related to *Hedysarum neglectum* and *H. dasycarpum*. From the mountains of Kokan at Lake Iskander-Kul, at 7,000 feet altitude.

42183 to 42199—Continued.

42193. Hedysarum semenowii Regel and Herd. Fabaceæ.

An erect Hedysarum from the steppes of the Balkasch region of Turkestan.

42194. Larix dahurica principis rupprechtii (Mayr) Rehd. and Wils. Pinaceæ. **Larch.**

"A tree in some parts of its native habitat as large as the common larch; bark scaling, but not fissured; young shoots pale brown, not downy. Leaves 1 to 1¾ inches long, not so tapered at the tip as in the common larch. Cones beautiful bright pink when young in April, ultimately three-fourths to 1¼ inches long, egg shaped, tapered toward the the top; scales rounded, with the margins distinctly beveled, and differing from those of *Larix europaea* in not being downy, at least as a rule. Native of Saghalien, eastern Manchuria, and Siberia. The date of its introduction is unknown, but it was cultivated as long ago as 1739, at which time and for long afterwards it was thought to be a native of Newfoundland, where, however, no proof of its being a native exists. It thrives much better in Britain than *L. sibirica*, and in several places is from 60 to 80 feet high. At Kew, in poor soil, it is 50 feet high, with a trunk 3 feet 8 inches in girth. As a tree for park or garden it has nothing to recommend it before the common larch except its interest and the brighter hue of its young cones." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 6.*)

42195. Spiraea veitchi Hemsl. Rosaceæ.

"A strong-growing shrub, probably 10 or 12 feet high eventually, producing gracefully arching shoots. Flowers in dense corymbs, 1½ to 2½ inches across. Native of central China; discovered by Wilson in western Hupeh in 1900, and introduced by him for Messrs. Veitch. It is a fine species (Mr. Wilson has told me he considered it the best of Chinese Spiraeas), somewhat similar in general aspect and in producing its flowers on short leafy twigs from the growths of the previous summer to the well-known *Spiraea canescens* (*flagelliformis*). It is readily distinguished from that species, however, by its smooth, entire leaves and smooth fruit. Its entire leaves also distinguish it from two other allies, *S. henryi* and *S. wilsoni*. I saw the plants first introduced in their young state in the Coombe Wood Nursery, when they were making shoots as much as 8 feet long in a season; when these the following June were wreathed from end to end with clusters of pure white blossom they made a picture of remarkable beauty." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 545.*)

42196. × Physalis bunyardi Hort. Solanaceæ.

"An interesting hybrid, growing to a height of 3 feet and having large fruits." (*Bunyard's catalogue.*)

"The plant called *Physalis bunyardi* Hort. is a very free-fruiting form, not so robust as *P. franchetii*, with glowing calyces; probably a form of that species or by some suggested as a hybrid with *P. alkekengi*." (*Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2608.*)

42197. Viburnum hupehense Rehder. Caprifoliaceæ.

"A deciduous shrub, the young shoots stellately hairy the first year, purplish brown the second. Leaves roundish ovate, coarsely toothed, dark green and covered with loose stellate down above, paler and more

42183 to 42199—Continued.

downy beneath; 2 to 3 inches long. Corymbs about 2 inches wide, the main and secondary flower stalks covered densely with stellate down; branches of the corymb usually five. Fruit egg shaped, red, one-third to two-fifths inch long. Native of Hupeh, China; discovered by Henry; introduced by Wilson in 1908. I do not know that it has yet flowered in cultivation, but it will no doubt soon do so. The above description is adapted from the original one of Mr. Rehder, who observes that it is most nearly related to *Viburnum dilatatum* (from which it differs in its orbicular-ovate leaves and stipuled leaf stalks) and to *V. betulifolium*, from which it is distinct in being downy on both leaf surfaces." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 650.*)

42198. VIBURNUM LOBOPHYLLUM Graebn. Caprifoliaceæ.

"A deciduous shrub, with young shoots smooth or soon becoming so, dark reddish brown when mature. Leaves ovate to roundish or broadly obovate, coarsely toothed except toward the base. Corymbs 2 to 4 inches wide, with seven main branches which, like the secondary ones, are minutely downy and glandular. Flowers white, one-fourth inch across, stamens longer than the corolla, anthers yellow. Fruit bright red, roundish, one-third inch long. Native of western China; introduced by Wilson in 1901 and again in 1907 and 1910. It belongs to the confusing group of red-fruited Asiatic Viburnums containing *wrightii, betulifolium, dilatatum*, etc." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 652.*)

42199. VIBURNUM RHYTIDOPHYLLUM Hemsl. Caprifoliaceæ.

"An evergreen shrub perhaps eventually 10 feet high and as much through. Leaves ovate-oblong, upper surface glossy, not downy, but deeply and conspicuously wrinkled; lower one grey with a thick felt or starry down. Flowers produced on large terminal umbellike trusses 4 to 8 inches across, which form into bud in the autumn and remain exposed all through the winter and until the blossoms expand the following May or June. They are dull yellowish white, about one-fourth inch in diameter. Fruit oval, one-third inch long, at first red, then shining black. Native of central and western China, introduced by Wilson for Messrs. Veitch in 1900. This remarkable shrub is one of the most distinct and striking not only of Viburnums but of all the newer Chinese shrubs. It appears to be quite hardy and flowers well in spite of the curious habit of forming its inflorescences and partially developing them in autumn. Its beauty is in its bold, wrinkled, shining leaves and red fruits. The flowers are dull and not particularly attractive. It was given a first-class certificate by the Royal Horticultural Society in September, 1907. During that month of the year its fruits are red." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 655.*)

42200. AMYGDALUS PERSICA NECTARINA Ait. Amygdalaceæ.

Nectarine.

From Harput, Turkey. Presented by Mr. Leslie A. Davis, American consul. Received March 24, 1916.

"Seed of the smooth-skinned peach, of the nectarine order, which is the better of the two varieties found here. This is an early variety, and I am informed that the best results are obtained by grafting." (*Davis.*)

42201. Platanus orientalis L. Platanaceæ. Oriental plane tree.

Presented by Mr. G. S. Miller, of the National Museum, through Mr. Frederick V. Coville, of the Bureau of Plant Industry. Received March 23, 1916.

"Seeds received from Dr. W. L. Abbott, of Philadelphia. Dr. Abbott states that they are from Kashmir, that the tree is a valuable shade tree of very rapid growth, handsome form, and enormous size, and that the seeds should be planted immediately. The Kashmir name is *chenar*. Dr. Abbott also states that the tree is not a native of Kashmir, but was brought from Persia." (*Coville.*)

See S. P. I. No. 42179 for previous introduction.

42202 to 42204.

Collected by Dr. David Griffiths, of the Bureau of Plant Industry. Received January 19, 1916. Notes by Dr. Griffiths.

42202. Chilopsis linearis (Cav.) Sweet. Bignoniaceæ.
(*Chilopsis saligna* D. Don.)

"From the Santa Rita Mountains, Ariz. (No. 1099 DG., October 12, 1915.) This is a small willowlike tree inhabiting desert washes from Texas to California. It is very showy when in blossom, the flowers being purplish tinged and resembling those of a miniature catalpa. In nature its habit is quite open and lax, but it stands pruning and can easily be shaped as desired. The seed can probably be planted in the open in a situation where there is good drainage and where moisture conditions can be controlled when the hot, dry season arrives."

42203. Dasylirion wheeleri S. Wats. Liliaceæ. Sotol.

"The sotol is on the whole a rather stiff, formal plant of the yucca family. It has a short, thick trunk and long, narrow, flat, spiny-edged, gracefully drooping leaves, very different in this respect from the stiff, rigid century plants, which are not distant relatives. It does not sucker like the century plants, neither does the plant die when it has thrown up a flower stalk, thus leaving an ugly break in the planting. Its flower stalks are immense. They often reach a height of 8 or 10 feet, the myriads of small flowers occupying a solid spindle-shaped space 4 feet in length. The plant itself, with its glabrous graceful leaves, is handsome, but it is strikingly attractive from early blossoming until late winter after the mass of seed has fallen. The sotols are most attractive as specimen plants. In Mexico the leaves are stripped of their curved teeth by being pulled through a slit cut in a piece of tin and then woven into durable floor coverings, the ones we have seen lasting in good condition for two years under ordinary wear. The usual practice is for the weaver to enter the house with an armful of the leaves suitably stained and beginning in one corner of the room weave a mat to fit the floor, composing the design as he proceeds. The price is usually about 40 cents (Mexican money) per meter. From the stems of the plant, particularly in the State of Chihuahua, is manufactured one of the most violent of intoxicating distillates. In times of excessive drought the plants are cut down and the stems chopped up as feed for live stock. I believe that the seed of this planted where drainage is good and where moisture conditions can be controlled can be brought through in the open."

42202 to 42204—Continued.

42204. ERYTHRINA FLABELLIFORMIS Kearney. Fabaceæ.

"A low, spiny shrub, 2 to 4 feet high, inhabiting the upper foothills of the isolated mountain ranges of the Southwest. Its beans range from cream through yellowish or coffee color to bright scarlet. It is deciduous in its native heath and will fill about the same rôle in planting as the smaller coral beans now grown. It will probably prove more hardy than the introduced species."

42205 to 42209. TRITICUM spp. Poaceæ. **Wheat.**

From Sydney, New South Wales. Presented by Mr. George Valder, undersecretary and director, Department of Agriculture. Received March 15, 1916. Notes by Mr. Valder.

"From the Cowra Experiment Farm."

42205. TRITICUM TURGIDUM L.

"Galland's Hybrid."

42206. TRITICUM DURUM × POLONICUM.

"Nevertire."

42207. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

"Blout's Lambrigg."

42208. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

"Nyngan."

42209. TRITICUM POLONICUM L.

"Polish."

42210. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Summer Hill, Mallow, Ireland. Tubers presented by Mr. J. F. Williamson. Received March 18, 1916.

"*Leinster Wonder.* It is a very vigorous grower, showing great immunity from disease, and is of excellent table quality. Haulm very dark green, of great strength, with strikingly large white flowers." (*Williamson's Catalogue of Seed Potatoes.*)

42211 to 42222. LIGUSTRUM OVALIFOLIUM × OBTUSIFOLIUM REGELIANUM. Oleaceæ. **Privet.**

From New Haven, Conn. Cuttings presented by the Elm City Nursery Company. Received March 29, 1916.

"Origin of the hybrid privet—seed parent *Ligustrum ovalifolium*, pollen parent *Ligustrum obtusifolium* [*regelianum*] (northern type). Seed obtained from *Ligustrum ovalifolium* in the fall of 1910 from a single plant in a group of several *obtusifolium*. The seed plant attracted our attention as it hung heavy with fruit, which is not common in this vicinity. The inference was that cross-fertilization had taken place with *obtusifolium*. The seedlings, some hundreds of which were planted in the field the following season, showed every indication that the crossing did take place. No two are very similar, varying greatly from upright to almost prostrate in habit, some very luxuriant and others quite dwarf, some now producing terminal clusters of fruit, while others fruit on the lateral branches only. Many have glossy leaves which are quite as persistent as *ovalifolium*; the foliage of others matures early. From the original planting we have now reduced the number which have unquestioned merit to 50, and these are growing at Edgewood. They vary at present in height from 2 to 12 feet. We anticipate that some of them will prove to be valuable hedge plants, partaking enough of the characteristices of *ovalifolium* to give these plants desirable hedge qualities and at the same time prove more hardy owing to the infusion of *obtusifolium* blood. They have not yet been subjected to temperature exposures which have killed *ovalifolium* entirely to the ground, conditions which do occur occasionally in this vicinity, so their relative hardiness has not been absolutely determined as yet." (*Elm City Nursery Co.*)

42223 to 42267. Ribes spp. Grossulariaceæ.

From Lethbridge, Alberta, Canada. Cuttings presented by Mr. W. H. Fairfield, superintendent, Experimental Station for Southern Alberta, Received March 29, 1916.

Requested by this office for the studies of the Office of Horticultural and Pomological Investigations.

42223 to 42239. Ribes nigrum L. **Black currant.**

42223. *Topsy.*
42224. *Eclipse.*
42225. *Success.*
42226. *Merveille de la Gironde.*
42227. *Ethel.*
42228. *Saunders.*
42229. *Ontario.*
42230. *Bang-Up.*
42231. *Magnus.*
42232. *Climax.*
42233. *Beauty.*
42234. *Winona.*
42235. *Monarch.*
42236. *Eagle.*
42237. *Norton.*
42238. *Kerry.*
42239. *Lee's Prolific.*

42240 to 42267. Ribes vulgare Lam. **Garden currant.**

42240. *Red Dutch.*
42241. *Victoria.*
42242. *New Red Dutch.*
42243. *Fay's Prolific.*
42244. *Red Grape.*
42245. *Raby Castle.*
42246. *Greenfield.*
42247. *La Conde.*
42248. *Rankin's Red.*
42249. *Wilder.*
42250. *Cumberland.*
42251. *Prince Albert.*
42252. *Long-Bunched Holland.*
42253. *Red English.*
42254. *Large Red.*
42255. *Frauenderfer.*
42256. *Champagne.*
42257. *Moore's Seedling.*
42258. *Pomona.*
42259. *Climax.*
42260. *Large White.*
42261. *Kaiser.*
42262. *Verrieris White.*
42263. *White Brandenburg.*
42264. *White Cherry.*
42265. *White Grape.*
42266. *White Pearl.*
42267. *Wentworth Leviathan.*

42268. Feronia limonia (L.) Swingle. Rutaceæ. **Wood-apple.**
(*Feronia elephantum* Correa.)

From Poona, India. Presented by the superintendent, Empress Botanical Gardens. Received March 31, 1916.

A spiny, deciduous tree, native of India, Ceylon, and Indo-China, with pinnate, three to seven foliate leaves and nearly globose fruits, 2½ to 3 inches in diameter, having a hard, woody rind, filled with pinkish edible pulp in which numerous woolly seeds are immersed. The pulp, which is acid, is used for making jelly, somewhat similar to black currant jelly, and also, with spice, oil, and salt, it is used by the natives of India to make chutney. The flowers and leaves have an odor of anise and are used as a stomachic. The commonly cultivated varieties of citrus can be grafted on this plant. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1219.*)

42269. PASSIFLORA LIGULARIS Juss. Passifloraceæ.

Sweet granadilla.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received March 30, 1916.

"A passion flower with climbing, large-branched stem of great length, woody below, somewhat corky, and large leaves bright green above, pale and glaucous beneath. The white flowers are marked with reddish purple, becoming almost blue at the edges. This fine passion flower recommends itself, not only by the beauty and delicacy of its blossom, but by the size and rich green of the foliage. It is a native of Peru." (*Curtis's Botanical Magazine, vol. 57, pl. 2967, 1830.*)

42270. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

From Tamatave, Madagascar. Presented by Mr. James G. Carter, American consul. Received March 29, 1916.

"Commonly known in Madagascar as *pois du cap* (cape beans). The annual quantity of cape beans exported from the west coast of Madagascar each year amounts to about 7,000 tons. These go principally to England, and from there are exported in considerable quantities to the New York market. There does not seem to be very much beriberi in Madagascar. It is understood, however, that four or five years ago, when Saigon rice was imported into the colony, this disease was somewhat prevalent. There would not appear to be any special means adopted, peculiar to Madagascar, for the treatment of this disease, and the use of this bean as a preventive and cure for beriberi has not been known here." (*Carter.*)

42271 to 42273.

From Kingston, Jamaica. Presented by Mr. H. M. Curran. Received March 31, 1916.

42271. CAESALPINIA CORIARIA (Jacq.) Willd. Cæsalpiniaceæ.

"*Divi-divi.* Small spreading trees 20 to 30 feet high, with fine foliage. The trees are covered with fruits. The tree has much the habit of Prosopis and is similar in appearance. This is the great tannin tree of northern South America." (*Curran.*)

42272. TOLUIFERA BALSAMUM L. Fabaceæ. **Toulu.**

"A large ornamental tree, used for street planting. It grows to a height of 50 to 75 feet and is of rapid growth, in habit resembling the elm." (*Curran.*)

42273. BLIGHIA SAPIDA Koen. Sapindaceæ. **Akee.**

The akee, a beautiful African tree introduced into the West Indies. Valued in Jamaica as a richly flavored and wholesome food. The bright-yellow fleshy arillus is the part eaten, but it should not be eaten if in the least decayed. The fruit is prepared in various ways, stewed in milk and afterwards browned in a frying pan with butter. It is also commonly eaten boiled and mixed with salt fish, onions, and tomatoes as a breakfast food. (Adapted from *Cook and Collins, Economic Plants of Porto Rico, p. 92.*)

See S. P. I. Nos. 1969 and 24592 for previous introductions.

42274. PYRUS MAMORENSIS Trabut. Malaceæ. **Pear.**

From Mustapha, Algiers. Presented by Dr. L. Trabut, director, Service Botanique, Algeria. Received March 31, 1916.

"A Moroccan pear from the Mamora. Very resistant to dryness in the sandy noncalcareous soils. This vigorous tree will probably form a good stock." (*Trabut.*)

42275 and 42276.

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Received March 16, 1916.

42275. BETA VULGARIS L. Chenopodiaceæ. **Beet.**

"Grown in Japan."

42276. ZEA MAYS L. Poaceæ. **Corn.**

"A corn with a very short cob grown on the slopes of Mount Fuji."

42277. NYSSA OGECHE Marsh. Cornaceæ. **Ogeechee lime.**

From Burroughs Station, Ga. Presented by Mr. S. B. Dayton. Received March 20, 1916.

A tree sometimes 65 feet high, with a maximum trunk diameter of 2 feet, with simple, entire leaves, and bearing red, very acid drupes two-thirds of an inch long.

42278. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**

(*Sorghum vulgare* Pers.)

From Tahiti, Society Islands. Presented by Mr. Edouard Ahnne, president, Chamber of Agriculture, through Mr. Thomas B. L. Layton, American consul. Received March 11, 1916.

"*To-ura*, indigenous. False grass of Guinea. Herbaceous plant, smooth, perennial. Stems upright, full, greenish yellow, $1\frac{1}{4}$ to 2 mm.; a little woody, internode from 0^{m} 20 to 0^{m} 25, few leaves at the base. Leaves green, sheath smooth, bearded at the apex, striated with age by red marks, length 50 to 60 cm., breadth 2 cm., midrib prominent, margin lightly scarious. Panicle from 35 to 40 cm.; reddish spikelets grouped by two or three in whorls. Roots fibrous. This grass grows in Tahiti in a wild state, all along the creeks, on the roadsides, and on the uncultivated lands. The horses and cattle seek for it willingly when it is young; later the stem becomes woody and hard." (*Ahnne.*)

"With regard to the plant known here as *to-ura*, I am inclined to believe that it is none other than the common guinea grass known in the United States. That grass is grown in certain sections of these islands as forage for cattle and horses, but it is also found in the wild state over large areas. It was not originally indigenous, but it has thrived since its introduction. The name *to-ura* is pronounced in the native Tahitian as though it were spelled *tow rah*, the tow as in the word tower." (*Layton.*)

42279. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Invercargill, New Zealand. Presented by Dalgety & Co. (Ltd.). Received March 15, 1916.

For use in selection and breeding experiments.

42280. INODES TEXANA O. F. Cook. Phœnicaceæ. Palm.

Collected by Dr. David Griffiths, of the Bureau of Plant Industry. Growing at the Plant Introduction Field Station, Chico, Cal.

"This native palm of the Rio Grande delta, while planted locally to some extent, is a species which has been neglected. It will fill the same rôle in planting as the fan palm and appears to be a little more hardy to frost conditions. It will form a pleasing variation from that species so extensively grown in the warmer regions of this country and serve to extend somewhat the region of possible palm culture. It is a species with a very local distribution in nature, being known only from this one delta region. It is producing well in the natural state at present. The seeds germinate readily soon after they fall from the trees in the late autumn. They are, however, extensively gathered and made into ornaments by the native population. This no doubt interferes decidedly with its reproduction." (*Griffiths.*)

42281. MEDICAGO SATIVA L. Fabaceæ. Alfalfa.

From Koorawatha, Narracan, Victoria, Australia. Presented by Messrs. Cullis, Hill, and Doake, through F. H. Brunning & Co., Melbourne. Received March 16, 1916.

"A strain known as *Hunter River* lucern."

42282 and 42283.

From Kieff, Russia. Purchased from Messrs. St. Przedpelski and T. Antoniewicz. Received March 18, 1916.

42282. CARAGANA PYGMAEA (L.) DC. Fabaceæ. Dwarf pea tree.

"A deciduous shrub, 3 to 4 feet high, similar in habit to *C. aurantiaca*, having long, slender, pendulous, or even prostrate branches. Flowers yellow, 1 inch long, produced in May and June at the joints of the previous season's shoots. In a wild state this species extends over the region between the Caucasus and Siberia and Thibet; introduced in 1751. It is a very pretty plant when in flower, the blossoms being pendulous on their short stalks from the lower side of the branchlets. It is often grafted on standards of *Caragana arborescens*, but can quite well be struck from cuttings made of half-woody young twigs in July and placed in gentle heat. By growing it on its own roots the ugly and often diseased union seen on grafted plants is avoided. It is nearly allied to *C. aurantiaca*, under which the differences are pointed out. Its slender, flexible shoots are used for tying in Siberia and are said to be equal to osiers for that purpose." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 291.*)

42283. HALIMODENDRON HALODENDRON (Pall.) Voss. Fabaceæ. Salt tree.
(*Halimodendron argenteum* Fisch.)

"This is a wide-spreading shrub with slender branches and small bluish green foliage, covered in early summer with numerous pale violet or rosy purple flowers. The small pale foliage and the slender-stalked drooping flowers combined with the spreading habit give to the plant a gracefulness and airiness of its own and make it a very desirable ornamental shrub. It is perfectly hardy north, resists drought and heat well, and thrives in sandy as also in saline and alkaline soils. Propagation is by seeds and by layers which root slowly; it also may be grafted on Laburnum or Caragana." (*Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1429.*)

42284. PENNISETUM GLAUCUM (L.) R. Br. Poaceæ. **Pearl millet.**
(*Pennisetum typhoideum* Rich.)

From Dakar, Senegal, Africa. Presented by Mr. W. J. Yerby, American consul, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received March 23, 1916.

"This head of pearl millet from Mr. W. J. Yerby measures 26 inches in length, while the average length of pearl millet heads is not more than 8 to 10 inches. Although of exceptional size the head is well filled, and the strain should be a good seed producer if it will mature in our Southern States." (*H. N. Vinall.*)

42285. CELTIS TALA Gillies. Ulmaceæ. **Nettle tree.**

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Received March 21, 1916.

"*Tala.* A large spiny tree, which is suitable for shaping, and especially for street planting. From the cool and temperate regions of Argentina." (*Carrasco.*)

42286 to 42291.

From Siena, Italy. Presented by the director, Botanic Garden, University of Siena. Received March 24, 1916.

42286. CASUARINA GLAUCA Sieber. Casuarinaceæ. **Beefwood.**

"The *Australian oak*, or *swamp oak*, is a tree of moderate size, growing to the height of 60 to 70 feet, usually straight and of rapid growth. The timber is red, beautifully marked, hard and tough, and is used for cabinet work and staves. In periods of drought the foliage is used for feeding stock. When the trees are cut down, the young growth shoots up quickly from the stump. It grows in the coastal districts here, in marshy country, and frequently in land submerged with tidal water. The timber makes the very best fuel, and the tree is the second best that I know of for planting in wet or moist locations. It also makes a good and handsome shade tree." (*B. Harrison*, in *The Everglades Magazine, April, 1913.*)

42287. CORNUS CAPITATA Wall. Cornaceæ. **Bentham's cornel.**

A small tree or shrub, often low and bushy in cultivation, but reported to have the appearance of a small apple tree in Nepal, where it is a native. It bears dense heads of yellowish flowers and attractive deep red-orange fruits about the size of a nectarine. (Adapted from *Curtis's Botanical Magazine, vol. 78, pl. 4641, 1852.*)

42288. GLEDITSIA CASPICA Desf. Cæsalpiniaceæ. **Honey locust.**

A tree 30 to 50 feet high, of beautiful foliage, with strong spines sometimes 8 inches long, pod 6 to 7 inches long and about 1 inch broad. Hohenacker [Enum. Talysch, Bull. Soc. Nat. Mosc., 1838: 351] states that the tree is abundant toward the village of Astara in Talysch Province, Russia, and is known by the Tartar name *lelegachatsch;* also that boys eat the sweet pulp of the pods, and that the pods are collected for fattening cattle. Its habitat is Asia, along the southern shore of the Caspian.

42289. PASSIFLORA FILAMENTO Cay. Passifloraceæ. **Granadilla.**

A handsome bluish passion flower resembling *Passiflora coerulea*, but differing in the brighter colors of the corona and in the corolla exceeding considerably the calyx. The flowers open in the night and close about noon the next day. Native of South America. (Adapted from *Curtis's Botanical Magazine, vol. 46, pl. 2023, 1819.*)

42286 to 42291—Continued.

42290. Passiflora herbertiana Ker. Passifloraceæ. **Granadilla.**

A white-flowered, tall climber with 3-lobed, cordate leaves, from New Holland. (Adapted from the original description in *Edwards's Botanical Register, vol. 9, p. 737, 1823.*)

42291. Passiflora suberosa L. Passifloraceæ. **Granadilla.**

An extremely variable species with attractive fruits. These are spotted when green and are deep violet colored when ripe. Native of the West Indies. (Adapted from *Curtis's Botanical Magazine, vol. 45, pl. 1983, 1818.*)

42292. Chorisia insignis H. B. K. Bombacaceæ.

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Received March 21, 1916.

"*Palo borracho.* An ornamental flowering tree, with very thick trunk, the pods of which produce vegetable wool. From the Argentine Tropics." (*Carrasco.*)

42293 to 42299.

From Siena, Italy. Presented by the director, Botanic Garden, University of Siena. Received March 24, 1916.

42293. Pittosporum bicolor Hook. Pittosporaceæ.

Usually a bushy shrub or small tree, though occasionally attaining a height of 40 feet; the thick, narrow leaves, 1 to 2 inches long, entire, hairy beneath and usually crowded, the purple and yellow flowers often forming terminal clusters. (Adapted from *Hooker, Flora of British India, vol. 1, p. 113, 1863.*)

42294. Pittosporum eriocarpum Royle. Pittosporaceæ.

A small tree with somewhat whorled spreading branches, nearly or quite obovate leaves (3 to 8 by 1½ to 2 inches), and yellow flowers one-third of an inch long in compound, many-flowered corymbs. (Adapted from *Hooker, Flora of British India, vol. 1, p. 199, 1872.*)

42295. Psidium acre Ten. Myrtaceæ. **Guava.**

This species is imperfectly known, in America at least. Trees introduced into California under this name are said to greatly resemble the yellow strawberry guava (*Psidium cattleianum lucidum*), but to have more elongated and usually larger fruit.

42296. Psidium montanum Swartz. Myrtaceæ. **Mountain guava.**

A lofty tree, sometimes 100 feet in height, with very smooth ash-colored bark. Flowers large, white, with the odor of bitter almonds; berry sour, the size of a cherry. The wood is hard, white, and highly esteemed, affording a timber of the hardest description, with the grain beautifully variegated, but not much used in building, perhaps on account of its hardness and cross grain and because when used as posts it rots quickly in the ground. It occurs at elevations of 3,000 to 6,000 feet. (Adapted from *William Fawcett, Economic Plants.*)

42297. Pterocarya fraxinifolia (Lam.) Spach. Juglandaceæ.
(*Pterocarya caucasica* Meyer.)

A handsome, ornamental, deciduous tree of rapid growth, up to 60 feet high, with spreading branches, graceful dark-green foliage, and bearing drooping racemes of light-green fruits. (Adapted from *Bailey, Cyclopedia of American Horticulture, vol. 3, p. 1464, 1904.*)

42293 to 42299—Continued.

42298. Sambucus ebulus L. Caprifoliaceæ. **Danewort.**

"A large herbaceous plant with pinnate leaves and compact clusters of purplish flowers; native of Europe. Every part of this plant is cathartic and emetic. The plant is sufficiently active to be poisonous in larger quantities." (*Sowerby, English Botany, vol. 4, p. 202.*)

For an interesting discussion of this plant, see Lindley, Treasury of Botany.

42299. Sollya heterophylla Lindl. Pittosporaceæ.

An attractive twining shrub, 3 to 4 feet high, with oblong entire leaves and terminal or axillary pendulous clusters of beautiful bright-blue bell-shaped flowers. (Adapted from *Curtis's Botanical Magazine, vol. 10, pl. 3523, 1836.*)

42300 to 42309.

From Tamingfu, Chihli, North China. Cuttings presented by Mr. J. G. Cole, at the request of Rev. Horace W. Houlding, South Chihli mission, through the American consul, Shanghai. Received March 31, 1916. Quoted notes by Mr. Cole.

42300 and 42301. Amygdalus persica L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

42300. "No. 9. *Lin t'ao.*" **42301.** "No. 10. *Lin t'ao.*"

42302 and 42303. Hibiscus syriacus L. Malvaceæ. **Rose of Sharon.**

42302. "White *Mu chin* (Chinese). A flowering shrub."

42303. "Purple *Mu chin* (Chinese). A flowering shrub."

42304. Pyrus sp. Malaceæ. **Pear.**

"Wild pear."

42305 to 42309. Ziziphus jujuba Mill. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

42305. "*Pu tao tsao.*" **42308.** "*Pu tao tsao.*"

42306. "*Tan tsao.*" **42309.** "*Ma yü tsao.*"

42307. "*Pu tao tsao.*"

42310 to 42320.

From Kieff, Russia. Purchased from Messrs. St. Przedpelski and T. Antoniewicz. Received March 17, 1916.

42310. Acer ginnala Maxim. Aceraceæ. **Maple.**

A small tree or large shrub of bushy habit with 3-lobed slightly heart-shaped leaves and very fragrant white flowers in short panicles, appearing in May. This maple is nearly allied to *Acer tataricum*, but differs markedly in the shape of the leaf. The foliage turns a beautiful red before falling, the species being one of the best for autumnal coloring. Native of China, Manchuria, and Japan. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 142, 1914.*)

42311. Abies sibirica Ledeb. Pinaceæ. **Fir.**

A very hardy fir from northern and eastern Russia to Kamchatka and Mongolia, 60 to 100 feet in height, with a trunk 2 to 4 feet in diameter; dark yellowish green leaves, densely crowded. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 173, 1914.*)

42310 to 42320—Continued.

42312. Caragana spinosa (L.) DC. Fabaceæ. **Pea tree.**

A deciduous shrub, 4 to 6 feet in height, with long, undivided, spiny branches and short-stalked bright-yellow flowers nearly an inch long. A curious shrub of the same type as *Caragana jubata* and *C. gerardiana*, but not so formidably armed or so downy. Native of Siberia. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 291, 1914.*)

42313. Crataegus pinnatifida Bunge. Malaceæ. **Hawthorn.**

A small tree, 15 feet or more high, with or without short thorns; leaves wedge shaped or straightly cut at the base, 2 to 4 inches long; pure white flowers three-fourths of an inch across, in downy-stalked clusters, appearing at the end of May or early in June. Fruit red and about five-eighths of an inch in diameter. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 433, 1914.*)

42314. Juglans mandshurica Maxim. Juglandaceæ. **Manchurian walnut.**

A Manchurian walnut, 50 to 70 feet high, with leaves 1½ to 2 feet or occasionally 3 feet long, composed of 11 to 19 leaflets. The fruit is clustered on the stalk and is roundish ovoid, with deeply pitted nuts 1½ inches long. It is very closely allied to *Juglans sieboldiana;* it is remarkably striking in the size of the leaves as a young tree. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 666, 1914.*)

42315. Lonicera chrysantha Turcz. Caprifoliaceæ. **Honeysuckle.**

A shrubby honeysuckle from Japan, up to 12 feet high, with upright stems, somewhat rhombic leaves 2 to 5 inches long and yellowish white, changing to yellow, flowers three-fourths of an inch long. It is particularly handsome in autumn with its bright coral-red fruit. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1910, 1916.*)

42316. Lonicera hispida Pall. Caprifoliaceæ. **Honeysuckle.**

A honeysuckle, native of Turkestan, 3 to 5 feet high, with bristly young shoots and yellow or yellowish white flowers about an inch long borne above two roundish, membranaceous bristle-edged bracts, up to an inch long. Interesting because of the large bracts subtending the flowers. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 45, 1914.*)

42317. Lonicera ruprechtiana Regel. Caprifoliaceæ. **Honeysuckle.**

A shrubby Manchurian honeysuckle up to 12 feet high, with nearly lanceolate leaves, somewhat grayish beneath, about 4 inches long, and pure white flowers in pairs on long peduncles. The red, or sometimes yellow, fruits are attractive. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1909, 1916.*)

42318. Ribes dikuscha Fisch. Grossulariaceæ. **Black currant.**

This species is closely related to the common black currant, *Ribes nigrum* and is considered by Schneider to be possibly identical with the northern black currant (*R. hudsonianum* Richards).

42319. Syringa emodi Wall. Oleaceæ. **Lilac.**

A large robust Himalayan lilac 10 to 15 feet high, closely allied to *Syringa villosa*, but with the leaves whiter underneath. The panicles are

42310 to 42320—Continued.

usually columnar, 3 to 6 inches long, not so richly colored as those of the above-mentioned species. It is useful in flowering rather late. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 566, 1914.*)

42320. Vitis amurensis Rupr. Vitaceæ. **Amur grape.**

A strong-growing deciduous vine, somewhat similar to the common grape, with leaves 4 to 10 inches wide, somewhat longer, three lobed, often deeply so, and the under surface somewhat downy. It is worth growing for its vigorous habit and the usually fine purple and crimson hues of its foliage. Native of Amurland, Chosen (Korea), and northern China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 666, 1914.*)

42321 to 42332.

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Received March 23, 1916.

42321. Acacia bonariensis Gillies. Mimosaceæ.

"*Napinday.* A handsome, very spiny tree, suitable for parks, from the temperate and cool sections of Argentina." (*Carrasco.*)

"Usually a small spiny tree which grows at length in circles. The yellow wood is hard, but has not been used. Horizontal cuts across the young shoots give a square section." (*Venturi y Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 37, 1910.*)

42322. Acacia moniliformis Griseb. Mimosaceæ.

"*Tusca.* A spiny tree, with fragrant flowers, of medium height. From the temperate and cool regions of Argentina." (*Carrasco.*)

"A species of *Espinillo* with yellow flowers separated on the stalk. Small branched, scarcely compact; grows in the valleys of the highlands; used for firewood. Wood reddish. Very abundant." (*Venturi y Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 35, 1910.*)

42323. Alegria divaricata (Mart.) Stuntz. Tiliaceæ.
(*Luehea divaricata* Mart.)

"*Soto caballo.* A leafy flower-bearing tree, with good quality wood; from the cool and subtropical regions of Argentina." (*Carrasco.*)

"Very abundant tree, large and tall, with light, white wood, used especially for the manufacture of shoes. When in flower it is very beautiful. It is not utilized in Alto Parana, but in Alto Uruguay it is used for rods, frames and doors, and windows and planking. It is exported to the cities along the rivers of Uruguay." (*Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 100, 910.*)

42324. Aspidosperma peroba Sald. Gama. Apocynaceæ.

"*Peroba.* An erect tree with flexible wood; from the subtropical regions in Argentina." (*Carrasco.*)

A Brazilian tree with alternate entire leaves and clusters of small flowers. The wood of this genus is valuable.

42321 to 42332—Continued.

42325. BARYXYLUM DUBIUM (Spreng.) Pierre. Cæsalpiniaceæ.
(*Peltophorum vogelianum* Walp.)

"*Ibirá-pitá.* A leafy tree, with erect trunk 1 meter in diameter; wood hard, indestructible, red; from the subtropical regions of Argentina." (*Carrasco.*)

A handsome ornamental tree with mimosalike foliage and striking yellow flowers arranged in huge panicles. It is closely related to the royal poinciana and vies with it in beauty of flower and foliage.

42326. COMBRETUM FRUTICOSUM (Loefl.) Stuntz. Combretaceæ.
(*Combretum loeflingii* Eichl.)

"*Plumerillo.* A magnificent climbing plant of rapid growth, the flowers resembling the Grevilleas; from the temperate regions of Argentina." (*Carrasco.*)

An ornamental climbing shrub with orange and green flowers; native to Brazil.

42327. GLEDITSIA AMORPHOIDES (Griseb.) Taub. Cæsalpiniaceæ.
(*Garugandra amorphoides* Griseb.) **Honey locust.**

"*Espina corona.* A leafy tree with hard wood; from the temperate and cooler regions of Argentina." (*Carrasco.*)

"A spiny tree, flowering in December; sometimes attains a height of 50 feet, trunk diameter often 2¼ feet. Hieronymus states that the bark is used in place of soap for removing spots from woolen and cotton goods; hence the name *quillay.* The leaves, young twigs, and roots have astringent properties; the wood is used in making vessels for holding liquids, in turning, for house furniture, and for wooden soles and pegs." (*Taubert, Berichte Deutsche Bot. Gesellsch., vol. 10, p. 637.*)

42328. PITHECOCTENIUM CYNANCHOIDES DC. Bignoniaceæ.

"*Tripa de Braya.* A vigorous climbing plant; from the temperate and hot regions of Argentina." (*Carrasco.*)

42329. PROSOPIS sp. Mimosaceæ. **Algaroba.**

"*Algaroba morada.* A hardy, strong tree. The wood is especially useful for sleepers, tannin extraction, etc. From the cool and temperate as well as the subtropical regions of Argentina." (*Carrasco.*)

Received as *Prosopis dulcis*, which is generally considered to be a synonym of *P. chilensis* (Mol.) Stuntz (*P. juliflora* DC.), but the material received does not agree with other material of that species.

42330. STIGMAPHYLLON JATROPHAEFOLIUM Juss. Malpighiaceæ.

"*Papa del rio.* A magnificent climbing plant with numerous flowers like Oncidium; from the temperate regions of Argentina." (*Carrasco.*)

A tropical American woody vine with yellow flowers in axillary, peduncled clusters.

42331. TIPUANA TIPU (Benth.) Lillo. Fabaceæ.
(*Tipuana speciosa* Benth.)

"*Tipu.* A large tree 50 meters in height, leafy, very ornamental, with good timber; from the subtropical, temperate, and cool regions of Argentina." (*Carrasco.*)

"Handsome tree, tall, large, straight trunked. Wood rose color to creamy white, soft and stringy, hard to saw and used very little in Jujuy, but in Tucuman it is used for bookshelves; also exported to

42321 to 42332—Continued.

Buenos Aires. It gives a fine red rosin. Very abundant." (*Venturi y Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 37, 1910.*)

42332. VITEX MONTEVIDENSIS Cham. Verbenaceæ.

"*Tarumá.* A leafy little ornamental tree, floriferous, with hard wood; from the subtropical regions of Argentina." (*Carrasco.*)

"This common species is found on the banks of the small streams; the wood, of reddish color, striped, and hard, is very good and valuable. The bark of the tree is fragile and grooved like that of the *Mata ojos* (*Pouteria sp.*) As it is well preserved in wet situations it is utilized for kilns, posts, etc., and being easy to split it is used for shingles on roofs. The fruit gives a kind of oil and the wood likewise, even after it is dried; when buried it oozes oil and seems to turn green again." (*Venturi y Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 104, 1910.*)

42333 to 42354. NICOTIANA spp. Solanaceæ. **Tobacco.**

From Cava, Italy. Presented by Mr. C. Emilio Anastasia, Ra Direzione Compartimentale delle Coltivazioni Tabacchi. Received March 25, 1916.

42333. NICOTIANA ACUMINATA (R. Grah.) Hook.

Herbaceous annual, viscid-pubescent; stem slender, branching; leaves ovate-lanceolate, undulate, sometimes subcordate, narrowed into a short petiole, apex long-acuminate; flowers loose-racemose; calyx glandular-pubescent, corolla white, about 3 inches long; tube green veined, slightly curved. Perennial in its native habitat, Chile. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2142.*)

42334. NICOTIANA ALATA Link and Otto.

Herbaceous perennial with slender erect stems 2 to 3½ feet tall and branching; flowers open at night and fragrant; tube yellowish green, limb nearly 2 inches across, pale violet beneath, white within. Native of Brazil, Uruguay, and Paraguay. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2141.*)

42335. NICOTIANA CHINENSIS Fisch.

An annual species growing to a height of 6 feet and having pink flowers in August. Originally found in China. (Adapted from *Johnson's Gardener's Dictionary, p. 658.*)

This species is referred by Comes, Monographia Nicotiana, p. 9, 1899, to the *angustifolia* form of *N. tabacum fruticosa* Hook. f.

42336. NICOTIANA GLAUCA R. Grah.

An erect, treelike species, up to 20 feet tall, glaucous-blue all over, with branching stems and long-petioled leaves. Flowers yellow, in loose, terminal, bracted panicles. Found in Argentina, Paraguay, and Bolivia. Easily grown from seed and frequently cultivated for its stately habit and glaucous-blue foliage which sometimes develops purple tints. It has escaped from cultivation and runs wild in Texas and California. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2143.*)

42337. NICOTIANA LANGSDORFII Schrank.

A pilose to downy herbaceous annual, with branching stems 2 to 3 feet tall; flowers greenish yellow in drooping panicles. Native of

42333 to 42354—Continued.

Brazil and Chile. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2143.*)

42338. NICOTIANA LONGIFLORA Cav.

An erect annual or perennial, 2 to 3 feet tall, having slender, bristly, scabrous stems and somewhat clasping, spatulate to lanceolate leaves, prominently undulate. Night-opening fragrant flowers 4 inches long, extra-axillar, in terminal loose racemes, pale violet to yellowish violet outside, white within, with yellowish violet anthers. Becomes an annual in northern gardens. Found from Texas to Chile and Argentina. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2141.*)

42339. NICOTIANA PANICULATA L.

An herbaceous, viscid-pubescent annual having a simple stem 2 to 3 feet tall, angular above, branching; yellowish green flowers in large terminal panicles. Not much cultivated. Native of Peru. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2143.*)

42340. NICOTIANA PLUMBAGINIFOLIA Viv.

An annual species growing to a height of 2 feet and having white flowers in May. Native of America. (Adapted from *Johnson's Gardener's Dictionary, p. 658.*)

42341. NICOTIANA QUADRIVALVIS Pursh.

An herbaceous, viscid-pubescent annual having erect or branching stems with leaves 4 to 6 inches long. Flowers few on short slender pedicels, purple without and white within. Formerly cultivated by the Indians and still grown by them sparingly. Known only from Indian cultivation in Oregon and Wyoming. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2142.*)

42342. NICOTIANA RUSTICA L.

An herbaceous plant, annual, biennial, or triennial, somewhat viscous pubescent, having stems about 3 feet tall, branching below. Yellowish or greenish day-opening flowers in terminal racemes. Found in Mexico and Texas. Said to be the first species of tobacco introduced into Europe. Its use was made known by Jean Nicot, for whom the genus was named. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2143.*)

42343. NICOTIANA RUSTICA L.

Received as *Nicotiana campanulata.* For a description, see S. P. I. No. 42342.

42344. NICOTIANA SILVESTRIS Speg. and Comes.

An herbaceous perennial, glandular-pilose throughout, having tall stems, leafy below, branching above; broad, oblong-spatulate leaves. White, fragrant flowers drooping in short racemose panicles. A night bloomer, but flowers remain open on cloudy days. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, 2141.*)

42345. NICOTIANA SUAVEOLENS Lehm.

An herbaceous annual or biennial, usually viscid, having stems 1 to 2 feet tall, densely villous at the base and glabrous above. Night opening, fragrant, greenish purple flowers in terminal racemes. Found in Australia. Said to grow in moderate shade. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2142.*)

42333 to 42354—Continued.

42346. NICOTIANA TABACUM L.

The ordinary tobacco of commerce.

42347. NICOTIANA ANGUSTIFOLIA CRISPA (Cav.) Comes.

Often referred to *Nicotiana tabacum*, but Comes in his *Monographie du Genre Nicotiana, p. 51*, considers *N. angustifolia* to be a good species.

42348. × NICOTIANA CALYCIFLORA Caille.

"The *calyciflora* (Cambridge) will hardly present flowers with petaloid calyx. It presents instead (and by reversion) flowers with purple corolla. This shows that it has been obtained from *Nicotiana purpurea* or *atropurpurea*. In fact, at Fojano della Chiana (Arezzo) the true *calyciflora* has been obtained by mutation of *N. atropurpurea*. Under cultivation it has in 1915 perfectly preserved the character, and I believe it will do so with you." (*Anastasia.*)

42349. NICOTIANA TRIGONOPHYLLA Dunal.

"*Nicotiana trigonophylla* is no more or less than *N. rustica*, while it ought to be something entirely different." (*Anastasia.*)

This species has stems 15 inches tall, with leaves that are triangular, sessile, somewhat clasping, about 2 inches long and five-eighths of an inch broad. The corolla is yellowish green, about one-half inch long; viscous pubescent throughout. Found from Utah to Mexico and California. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2144.*)

42350. NICOTIANA UNDULATA Ruiz and Pavon.

Said to be a variety of *Nicotiana suaveolens* Lehm., with large undulated leaves and flowers larger than that species. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2142.*)

42351. NICOTIANA VISCOSA Lehm.

"*Nicotiana viscosa* ought to be near *N. langsdorffii* (a *langsdorffii* with large flowers, with the characters of *alata*); instead it is a *rustica* (like *texana*)." (*Anastasia.*)

An annual species 3 feet tall, having pink flowers in July. Originally from Argentina. (Adapted from *Johnson's Gardener's Dictionary, p. 658.*)

42352. NICOTIANA TABACUM MACROPHYLLA Dunal.

Received as *Nicotiana latissima* Mill.

42353. NICOTIANA TABACUM MACROPHYLLA Dunal.

Received as *Nicotiana macrophylla* Lehm.

"A large-leaved variety with large red flowers, of which there are several horticultural forms." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2144.*)

42354. × NICOTIANA SANDERAE Hort.

"A viscid-pubescent herbaceous annual, with stems 2 to 3 feet tall, of bushy habit; corolla salverform, the lobes carmine-rose. Originated in 1903 by Sander & Sons, St. Albans, England, as a cross between *Nicotiana alata* and *N. forgetiana*." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2142.*)

42355 to 42376.

From Madagascar. Presented by Mr. Eugene Jaeglé, director, Agricultural Station of Ivoloina, near Tamatave, through Mr. James G. Carter, American consul. Received March 31, 1916.

42355. Adenanthera pavonina L. Mimosaceæ. **Coral-bean tree.**

"A handsome deciduous tree with spreading branches and bipinnate leaves, bearing pods of glossy, scarlet, biconvex seed. Flowers in racemes, numerous, small, white and yellow mixed, fragrant.

"The tree is a native of the East Indies, where the jewelers use the seeds for weights, each weighing almost exactly 4 grains. The heartwood of the larger tree is of a deep red color. It is hard and durable and in India is sometimes used as a substitute for red sandalwood. It yields a dye which the Brahmins of India use for marking their foreheads. It has long been growing in Guam and is pretty well distributed over the island. Its vernacular name [kolales] is an imitation of the 'corales' (coral beans) and is likewise applied to the smaller seeded *Abnus abrus*." (*W. E. Safford, Useful Plants of Guam, p. 174.*)

See S. P. I. Nos. 38650 and 39542 for previous introductions.

42356. Albizzia chinensis (Osbeck) Merr. Mimosaceæ.
(*Albizzia stipulata* Boiv.)

A large, deciduous, fast-growing tree of tropical Asia, whose wood is used for cart wheels, wooden bells, cabinet work, and furniture, as well as for fuel; the branches are used for fodder, and the trunk yields a gum which is suitable for sizing paper.

For previous introduction, see S. P. I. No. 39104.

42357. Cajuputi leucadendra (Stickm.) Rusby. Myrtaceæ. **Cajuput.**
(*Melaleuca leucadendron* L.)

The cajuput tree of India and Australia. Reaches a height of 80 feet. Can be grown on the edges of salt-water swamps, where no Eucalyptus will survive. Like the Eucalyptus the tree is believed to be valuable for subduing malarial vapors. The lamellar bark is valuable for preserving fruit wrapped in it. The wood is hard, close grained, and almost imperishable underground. The leaves yield as much as 2 per cent of the well-known cajuput oil, closely allied to that of Eucalyptus. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 303.*)

42358. Bichea acuminata (Beauv.) W. F. Wight. Sterculiaceæ.
(*Cola acuminata* Schott and Endl.) **Kola nut.**

This is one of the largest and most beautiful trees of the river regions of Senegambia. It grows to a height of 10 to 20 meters, having a large trunk and strong branches, the wood being good for naval construction, carpentry, etc. The leaves are oval-acuminate and alternate, the flowers very numerous, apetalous and polygamous, in paniculate cymes. At 10 years of age the tree comes into full bearing and may yield 45 kilograms of seed twice annually, in November and June. The seeds, often reduced to a large, more or less fleshy embryo, are a clear yellow or rosy red in color. Deprived of their covering, they vary in weight from 5 to 25 grams. Kola is highly prized by all the African tribes, who use it in the fresh state for chewing and in the dry state as a food. Its taste, at first sweetish, is astringent, then bitter. It has the property of making brackish and hot water agreeable and fresh. Like maté and coca, it contains caffein and quiets hunger and allows one to endure the most prolonged labor without fatigue. In

42355 to 42376—Continued.

addition, swallowed after having been chewed or taken as a powder, the kola nut is a valued antidysenteric and is passed among the negroes as a powerful aphrodisiac; native names *Gourou*, *Ngourou*, and *Café du Soudan*. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises, pp. 343, 805.*)

42359. BICHEA ACUMINATA (Beauv.) W. F. Wight. Sterculiaceæ. (*Cola acuminata* Schott and Endl.) **Kola nut.**

See S. P. I. No. 42358 for description.

42360. CANANGIUM ODORATUM (Lam.) Baill. Annonaceæ. **Ilang-ilang.** (*Cananga odorata* Hook. f. and Thoms.)

"This is a handsome tree, symmetrical and stately, reaching a height of 50 feet or more. It has a smooth, hard, grayish bark, resembling that of the beech. It flowers in April and May or perhaps even earlier. The long, straplike, yellowish petals give out a rich, spicy fragrance, somewhat resembling that of cinnamon and very pronounced just after a rain." (*J. E. Conner.*)

See also S. P. I. No. 38652 for previous introduction.

42361. CARICA PAPAYA L. Papayaceæ. **Papaya.**

See S. P. I. No. 42055 for description.

42362. CASSIA SIAMEA Lam. Cæsalpiniaceæ.

A valuable medium-sized tree, having pinnately compound leaves and oblong medium-sized leaflets. It is decidedly ornamental on account of its erect terminal panicles of yellow flowers and elongated flat pods. It is commonly cultivated in the Philippines and has done remarkably well in Cuba. The wood is considered of value for house pillars and in the making of furniture. Native name, *Ong-canh-eh Kmer*. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises, p. 287*, and from the *Catalogue of the Manila City Nursery.*)

42363. CASTILLA ELASTICA Cerv. Moraceæ. **Rubber tree.**

A lofty, deciduous, native American forest tree of the breadfruit family, growing to a height of 20 meters and over, the young twigs being densely covered with yellowish or grayish hair. Mature leaves rather large, dark green above, paler and velvety beneath. Rubber is obtained in the usual way by tapping the tree and evaporating the moisture from the latex. (See *Contributions from the U. S. National Herbarium, vol. 13, part 7, 1910, p. 277.*)

42364. CITRUS HYSTRIX DC. Rutaceæ. **Papeda.**

A large, thorny tree, 6 to 12 meters high, having broadly winged leaves 16 to 24 cm. long. Fruits variable, from oblate to pyriform, turbinate or oblong, smooth to more or less corrugate, greenish lemon yellow; rind medium thick, flesh greenish, juicy, sharply acid, aromatic, contained in 12 to 15 locules; seeds, usually many, flat, reticulate. Found in the Malay Archipelago, including the Philippines, to India. (Adapted from *Wester, Citriculture in the Philippines, Bulletin 27, 1913.*)

42365. LINOMA ALBA (Bory) O. F. Cook. Phœnicaceæ. **Palm.**

A slender, spineless, arecalike palm found in tropical Asia, where it grows to a height of 30 feet or more and a diameter of 8 or 9 inches, dilated at the base. The leaves are 8 to 12 feet long. Branches of the spadix 6 to 18 inches long, erect or slightly reflexed, zigzag when young.

42355 to 42376—Continued.

By far the best of the genus and when young a very desirable pinnate house and table palm deserving to be well known. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1004*, under *Dictyosperma.*)

42366. Eugenia parkeri Baker. Myrtaceæ.

A Madagascar tree, the wood of which is used for cabinetmaking and the leaves of which have been used with considerable success as an antidysenteric. Native names *Marotampona, Rotra, Vavarotra*, and *Voamarintampona.* (Adapted from *Heckel, Les Plantes Utiles de Madagascar, p. 149.*)

42367. Funtumia elastica (Preuss) Stapf. Apocynaceæ.

Lagos rubber tree.

A tall forest tree growing to a height of 100 feet, usually near a stream, and found along the west coast of Africa from the Gold Coast in Ashanti through Lagos and lower Nigeria to the valleys of the Mungo River. The trunk is cylindrical with pale spotted bark; leaves oblong or lance-oblong, undulate; flowers white or yellowish, in short-peduncled, many-flowered, dense cymes. Yields the Lagos caoutchouc. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1305.*)

42368. Hyphaene coriacea Gaertn. Phœnicaceæ. **Palm.**

A palm which reaches a height of 2 or 3 meters on the northeast coast of Madagascar, increasing by tufts of four or five leaves and sometimes branching on the main trunk. The leaves show the morphological peculiarity of being a transitional form between the palmate and pinnate leaves of the Cocos tribe. The leaves with the petiole are from 1.7 to 1.8 meters long. From the petioles of various palms are drawn fibers known in commerce under the name of piassavas. Perhaps this palm may be included among these piassavas. The filaments which have their origin at the base of the petiole measure 0.8 to 1 mm. in diameter. Besides, in the leaf, the intersegmentary filaments, measuring from 50 to 70 cm. in length, may be employed as thread. However, their resistance and elasticity are less than the coir of the coconut. Native names are *Banty, Lokoko, Satranamira*, and *Satranatrichy.* (Adapted from *Heckel, Les Plantes Utiles de Madagascar, p. 190, 1910.*)

42369. Intsia bijuga (Colebr.) Kuntze. Cæsalpiniaceæ.
(*Afzelia bijuga* A. Gray.)

A leguminous tree described as being from the Fiji Islands, but apparently widely distributed in Oceanica. The leaves are abruptly pinnate, the leaflets mostly in two pairs and ovate. Flowers in small terminal panicles. Pods oblong and flat, 5 to 8 inches long by 2 inches broad, containing compressed-orbicular seeds, 1 inch or more in diameter. Doubtless the source of the *ifit* used in Guam as a cabinet wood and for general construction purposes. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, described under *Afzelia, vol. 1, p. 229.*)

42370. Litsea laurifolia (Jacq.) Cordem. Lauraceæ.
(*Litsea sebifera* Pers.)

A timber tree of the laurel family, 15 to 30 feet high, found in Cochin China. The wood is greenish yellow, fine grained and soft, with long straight fiber and very easy to work. It is not easily attacked by insects and lasts well exposed to the air. Found to be good for light carpentry, joinery, and flooring. The leaves and twigs of this tree are

42355 to 42376—Continued.

filled with a glutinous substance which makes water mucilaginous. This is used for inflammation, redness of the skin, and as a remedy for hysteria. The pericarp of the fruit contains a fatty material, a true wax, which is used for making candles that give off a disagreeable odor on burning. Native names, *Cay-loi-nhot* and *Bois d'oiseau.* (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises, p. 533,* under *Tetranthera laurifolia.*)

42371. LONCHOCARPUS FORMOSIANUS DC. Fabaceæ.

A much-branched tree from Senegal, 5 to 6 meters tall, covered during the rainy season with magnificent bunches of lilac-colored flowers recalling *Syringa vulgaris* by their color and perfume. The natives make a decoction from the bark and administer it for stomach complaints in children, the tannin it contains probably being the active agent. Native names *Koll* and *Ossani.* (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises, p. 801.*)

42372. RAVENALA MADAGASCARIENSIS Sonner. Musaceæ. **Traveler's-tree.**

The so-called traveler's-tree is a magnificent palmlike tree of the Musaceæ, confined to Madagascar. It grows to a height of 20 to 30 feet, having a palmlike trunk and bananalike leaves of gigantic size, arranged in two rows on opposite sides of the arboreous stem, giving one the impression of an immense fan. The leaves when cut yield an abundance of refreshing juice, with which travelers allay their thirst. The flowers are comparatively small, aggregated in the axils of the leaves. The arillus surrounding the beanlike seeds is of a most beautiful ultramarine color and yields an essential oil. A dye is extracted from the capsules. (Adapted from *Lindley, Treasury of Botany, vol. 2, p. 1192.*)

42373. SPATHODEA CAMPANULATA Beauv. Bignoniaceæ.

A tall, erect, bignoniaceous tree found in western tropical Africa and introduced into Java, Ceylon, and other tropical countries as an ornamental shade tree. It is quite commonly planted about Kandy, Ceylon, where its racemes of scarlet or crimson flowers at the tips of the branches make a strikingly handsome and conspicuous appearance at a distance. The unexpanded flowers retain a quantity of water, and this has led to the name *fountain tree*, by which it is sometimes known. (Adapted from *MacMillan, Tropical Gardening and Planting, p. 264.*)

42374. TECTONA GRANDIS L. f. Verbenaceæ. **Teak.**

A large deciduous forest and timber tree, indigenous in both peninsulas of India. The young branches are quadrangular, having opposite leaves and terminal panicles of white flowers, followed by round fruits about the size of cherries, covered with spongy wool and inclosed in a kind of bladder formed of the enlarged calyx. The valuable wood is that chiefly exported from India, more particularly Burma, and is the most important building timber of the country. (See *Watt, Commercial Products of India, p. 1068,* and *Lindley, Treasury of Botany, vol. 2, p. 1128.*)

42375. TRACHYLOBIUM VERRUCOSUM (Gaertn.) Oliver. Cæsalpiniaceæ.

This spineless leguminous tree, found on the islands of Madagascar and Reunion, grows to a height of about 20 feet and has dense clusters of white flowers. It produces a true copal resin, or animé, which is

42355 to 42376—Continued.

used for the manufacture of varnish. The resinous wood is very hard and heavy and lasts very well. The sapwood is the color of oak and the heartwood is suitable for cabinetmaking. Native name *Copalier.* (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises, p. 531,* under *Hymenaea verrucosa.*)

42376. Typhonodorum lindleyanum Schott. Araceæ.

This species of aroid is found in Zanzibar, Mauritius, and Madagascar, and, like all of the genus, it grows near the banks of muddy streams or in marshes. The plant measures from 1.5 to 2.5 meters high. All parts give off an irritating juice which causes itching. The Malagasy make an edible starch by drying the grated base of the plant over a slow fire. In spite of the action of the fire, however, this starch causes an itching in the mouth and even in the esophagus. This starch is also considered an excellent remedy against the bites of venomous animals. Certain animals, such as wild boars, are very fond of the entire stalk. From the leaf sheath, the Sakalavas extract a thread which they manufacture into heavy fishlines, and according to Perrier de la Bathie a variety which has reddish and blackish sheaths gives better fibers than the variety which has white sheaths. It is a very easy matter to gently draw out the threads after abruptly breaking the sheath, provided they are pulled out parallel to the axis. Thus obtained, the threads are at first a deep yellow, becoming much lighter with washing. Native names *Viha* and *Vihana.* (Adapted from *Heckel, Les Plantes Utiles de Madagascar, pp. 254–255,* under *T. madagascariensis.*)

42377 to 42380.

From Chefoo, China. Presented by Mr. A. Sugden, customhouse, through Mr. John F. Jewell, American consul, Chefoo. Received March 29, 1916.

42377 and 42378. Arachis hypogaea L. Fabaceæ. **Peanut.**

42377 Small variety. 42378. Large variety.

42379. Amygdalus persica L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"Mixed peach stones of various sorts and seasons." (*Sugden.*)

42380. Prunus armeniaca L. Amygdalaceæ. **Apricot.**

Introduced for breeding experiments.

42381 to 42383.

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Received March 21, 1916. Notes by Señor Carrasco.

42381. Bauhinia candicans Benth. Cæsalpiniaceæ.

"*Caoba.* Ornamental tree, with excellent wood, from the temperate region of Argentina."

42382. Caesalpinia melanocarpa Griseb. Cæsalpiniaceæ.

"*Guayacan.* A handsome leafy tree, with hard reddish wood, from the temperate region of Argentina."

42383. Cassia laevigata Willd. Cæsalpiniaceæ.

"*San Falso.* A vigorous ornamental tree from the temperate and hot regions of Argentina."

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U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

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OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1916.

(No. 47; Nos. 42384 TO 43012.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1916 (NO. 47; NOS. 42384 TO 43012).

INTRODUCTORY STATEMENT.

This inventory covers the spring months of the year preceding our entry into the Great War. During those months 40 countries sent freely through their official representatives, or allowed to pass freely, the plant material collected within their borders which this inventory describes. In the light of recent events this fact takes on a new significance. It shows the spirit of free exchange of material of the greatest value which existed before the war, material from which food crops of great importance could be developed. Upon no single species of plant had any nation placed an embargo. It was possible at any time through official requests to secure every courtesy desired and, often without cost, all plant material asked for. The policy, followed by this office for 10 years, of offering to secure free of cost small quantities of plant material of American species may have been in part responsible for the hearty assistance rendered by these representatives of 40 foreign countries. Even the Ameer of Afghanistan, who guarded jealously every avenue of communication with the outside world, sent a shipment of plants as a gift to this Government previous to the war.

This inventory describes collections made by only one representative of the office, Mr. H. M. Curran, who as a collaborator collected, in connection with other work upon which he was engaged in Colombia, seeds of some rare and interesting oil palms and of tropical forest and other economic trees of that country.

Of the material sent in by correspondents, the cerealists will be interested in a collection of South African endemic varieties of wheat (Nos. 42391 to 42426) which Mr. I. B. Pole Evans reports have been cultivated for many years on irrigated lands; and in the Papago sweet corn of Arizona (No. 42642), which may prove valuable for silage in Kansas and Nebraska.

Four good tropical bonavist beans (Nos. 42577 to 42580) from British Guiana, one of which lasts for two years, may interest Florida truck growers; and a relative of the udo from the Himalayas, *Aralia cachemirica* (No. 42607), which is hardy at the Arnold Arboretum, near Boston, deserves to be tested in comparison with the Japanese vegetable.

A most noteworthy addition is the Grimaldi collection of hybrid grapes, selections of many hundreds of hybrids made by Dr. Clemente Grimaldi between the Italian varieties of the European grape and various American species of Vitis (Nos. 42477 to 42519). These were presented by Mr. F. Paulsen, director of the Regio Vivaio di Viti Americane, direct from Palermo. They are presumed to contain some stock varieties and direct producers of exceptional value because of their resistance to drought and to an excessive content of lime in the soil.

The cherimoya has shown itself so well adapted to cultivation in California and Florida and its rapid recovery from frost injury has been so noticeable that five named grafted varieties from Chile (Nos. 42897 to 42901), gifts of Sr. Adolfo Eastman, of San Francisco de Limache, have already attracted considerable attention in those regions where this delicious fruit can be grown.

The roselle jelly plant is a success in Florida and Texas, but too often the crop is cut short by frost. Wester's strain, Temprano, which matures 20 days before the others, may make the growing of this remarkable jelly-producing plant a success farther north (Nos. 42471 to 42475).

The Macadamia is bearing in southern Florida and California, and several people are studying its possibilities. *Macadamia minor* (No. 42468), a smaller species sent in by Mr. J. F. Bailey, should be tested in the same localities.

We are accustomed to connect high protein content with leguminous crops, but in the Capoeira branco, *Solanum bullatum* (No. 42815), which Mr. Benjamin H. Hunnicutt, of Lavras, Brazil, reports is relished by cattle and horses, we have one of the Solanaceæ, the leaves of which, according to analysis, contain 20 to 28 per cent of protein, and the branches 14.06 per cent of protein, dry weight. This is higher in protein than many alfalfas, and it deserves the consideration of forage-crop specialists.

Dr. J. H. Maiden, of Sydney, Australia, proposes the Japanese grass, *Osterdamia matrella* (No. 42389), for culture on swamps and dry flats near the sea and believes it worthy of trial in sand-hill districts or on saline lands near the coast.

It is recognized that bamboo thickets form good grazing grounds for cattle. The switch cane of our Southern States no doubt furnishes a very considerable amount of fodder for southern cattle. In the Andean Cordilleras another bamboo, the canea, *Chusquea quila* (No. 42388), is highly considered as a forage plant and exists in great quantities there, according to Dr. Vereertbrugghen, who has succeeded in obtaining a quantity of seed for trial.

Mr. J. Burtt Davy, who has sent in many valuable things from South Africa, submits for trial the seeds of what he believes is a new annual hay grass for wettish lands in the maize belt of the South, especially for alluvial deposits where water is apt to stand during rains. Animals, he reports, are extremely fond of this *Panicum laevifolium* (No. 42608).

The so-called algaroba of Hawaii, introduced by padres into the islands, has been such a valuable forage tree that the Philippine aroma, *Prosopis vidaliana* (No. 42807), which resembles and has until recently been confused with it, merits attention. It is quite distinct, however, having no sweet arillus in the pod; and since it spreads along the sandy coast region and up on the hillsides and is relished by stock it deserves to be naturalized throughout the Tropics.

The importance of vegetable oils has been emphasized by the war, and it is evident that Americans have paid too little attention to the South American wild palms, from the kernels of which excellent oils are obtainable. The Corozo palm, *Elaeis melanococca* (No. 43001), according to Curran, yields an excellent cooking oil and is found in immense numbers on the flooded areas of Colombia, while the cultivation of the Cohune palm, *Attalea cohune* (No. 42707), according to Consul Dyer, of Honduras, is capable of being developed into an important industry there.

Dr. L. Trabut, our collaborator, who has made so many valuable suggestions that we listen to him with unusual interest, proposes *Saccharum biflorum* (No. 42551), a grass of great size much used in Algeria as a screen and in Sicily and on the banks of the Nile as a sand binder, for trial in our Southwestern States.

Besides the strictly economic plants, this inventory includes several striking new ornamentals. S. P. I. Nos. 42435 to 42443 show a collection of tree and shrub seeds from Dr. Fischer de Waldheim and include a rare Turkestan maple, the oriental beech, a Turkestan mountain cherry, a mountain almond, and the most decorative of all the tamarisks. S. P. I. No. 42597, *Cornus capitata*, from the Himalayas, has bracts that are sulphur yellow instead of white in color, like our dogwoods, and bears fruits 2 inches long and fleshy like a strawberry. What might be done in the hybridization of our eastern and western species with this Himalayan dogwood!

Actinidia arguta is such an indispensable porch vine and its foliage is so universally free from disease that the larger leaved *A. callosa henryi* (No. 42683) from central China deserves to be tried in comparison.

M. Vilmorin's new hybrid clematis (No. 42688), a result of crossings between Wilson's *Clematis montana rubens*, one of the loveliest of all climbers but tender, and *C. chrysocoma*, is said to be more vigorous and branching than the former, and it may be hardier.

S. P. I. No. 42691 is the new Chinese *Deutzia longifolia veitchii*, one of the most interesting new flowering shrubs introduced from China, with large beautiful rose-colored flowers, making it especially suitable for parks.

Rose growers will take a particular interest in the remarkable collection of rose species (Nos. 42974 to 42982) from the Arnold Arboretum, which has gathered them from China and Chosen (Korea). This collection represents material of the greatest value for hybridizers and can hardly fail to lead to the origination of many new and lovely hardy roses for America.

Perhaps the most remarkable plant listed, from the botanist's point of view, is the Javanese shrub *Pavetta zimmermanniana* (No. 42767). Its leaves are inhabited by bacterial colonies which induce knots analagous to those formed by *Bacillus radicicola* in the roots of leguminous plants. These knots are apparently essential to the healthy growth of the plant, and the bacterium is universally present in the young seed. This represents a new class of plants whose rôle in our agriculture remains to be further studied.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Mrs. Ethel H. Kelley.

David Fairchild,
Agricultural Explorer in Charge.

Office of Foreign Seed and Plant Introduction,
Washington, D. C., February 11, 1919.

INVENTORY.

42384 and 42385. Nephelium spp. Sapindaceæ.

From Buitenzorg, Java. Presented by the director of the Botanic Gardens. Received April 6, 1916.

42384. Nephelium lappaceum L. **Rambutan.**

"The rambutan tree grows to a height of about 40 feet, and when in fruit is a handsome sight, the terminal clusters of bright crimson fruits being produced on every branch. The compound leaves are made up of oblong-ovate leaflets about 4 inches long by 2 inches wide. In habit of growth the tree appears to be normally rather round-topped and spreading, but as it is frequently planted among other trees, it is forced to grow tall and slender, branching only at a considerable height above the ground. A cluster of rambutans, when highly colored, is exceptionally attractive. The best forms attain, when fully ripe, a rich crimson color. The individual fruits are slightly smaller than a hen's egg, but more elongated in form. They are covered with soft spines about half an inch in length and are borne in clusters of about 10 to 12 fruits. The skin is not thick or tough, and to eat the fruit the basal end is torn off, exposing the aril, which, with a slight pressure on the apical end of the fruit, slides into one's mouth. The aril is white, nearly transparent, about one-fourth of an inch thick, and has a mildly subacid, somewhat vinous flavor." (*Wilson Popenoe.*)

See S. P. I. No. 34494 for previous introduction.

42385. Nephelium mutabile Blume. **Pulassan.**

"*Pulassan.* A Malayan tree, similar to the rambutan in appearance, but differing in the fruit and in the leaves, which are gray beneath. The fruit is larger than the rambutan, of a deep purple-brown, with short, blunt processes, and, according to Ridley, the flavor is decidedly superior to that of the latter fruit." (*Macmillan, Handbook of Tropical Gardening, 2d ed., p. 176.*)

42386. Castilla nicoyensis O. F. Cook. Moraceæ. **Nicoya rubber.**

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received April 3, 1916.

A medium-sized tree, 10 to 20 meters high, with deciduous leaves 8 to 18 inches long and 4 to 8 inches broad, bearing inconspicuous flowers and orange-red fruits in a receptacle 2 to 3 inches in diameter. Reported so far only from the peninsula of Nicoya, but the probability is that it will be found all along the Pacific coast from Nicaragua to Panama. It is a good rubber producer, the milk being particularly abundant toward the end of the dry season. Owing to this fact, it is almost exterminated from the western forests of Costa Rica. (Adapted from *Pittier, Contributions from the U. S. National Herbarium vol. 13, p. 275.*)

For previous introduction, see S. P. I. No. 38188.

42387. Psidium guajava L. Myrtaceæ. Guava.

From Allahabad, India. Presented by Prof. P. H. Edwards, American Presbyterian Mission. Received April 1, 1916.

"*Sufeda* or *Safeda.* White with creamy skin and smooth delicious flesh. This variety is considered the best." (*Edwards.*)

42388. Chusquea quila Kunth. Poaceæ. Bamboo.

From Bariloche, Argentina. Presented by Dr. Joseph Vereertbrugghen. Received April 6, 1916.

"*Canea*, the bamboo from this Cordillera. It is difficult to get ripe seed, but at last I believe I have the real stuff, full grown, ripe, and well dried. According to an agricultural paper of Buenos Aires, they have never tried to get this bamboo from seed, but transplanted the roots." (*Vereertbrugghen.*)

42389. Osterdamia matrella (L.) Kuntze. Poaceæ. Grass.
(*Zoysia pungens* Willd.)

From Sydney, New South Wales, Australia. Presented by Dr. J. H. Maiden, director, Botanic Garden. Received April 1, 1916.

A grass of considerable value on littoral swamps and dry flats near the sea. According to Kirk, it is found sometimes forming a compact turf of dry land and affording a large supply of succulent herbage for horses, cattle, and sheep. Its value, however, in such localities, if bulkier grasses would grow there, must be comparatively little, as, from its close-growing habit, it chokes out all other species. It is evidently much relished by stock, and is worthy of introduction in sand-hill districts near the sea or on saline soil inland. (Abstract from *Maiden, Useful Native Plants of Australia, p. 112.*)

For previous introduction, see S. P. I. No. 34657.

42390 to 42427.

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Received April 5, 1916. Quoted notes by Mr. Evans.

"Varieties of wheat commonly grown in South Africa. The seed of these varieties was sown during the winter months as late as August and reaped during the summer months; that is to say, from November to January. They have all been grown under irrigation with the exception of those noted."

42390. Hordeum intermedium cornutum (Schrad.) Harlan. Poaceæ. Barley.

"No. 18. *Barley-wheat*, from Fauresmith."

42391 to 42421. Triticum aestivum L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

42391. "No. 14. *Kolonie Rooi Koren*, from Zastron."

42392. "No. 1. *Early Beard*, from Edenburg, Orange Free State."

42393. "No. 3. *Du Toit's Koren*, from Austens Port."

42394. "No. 4. *Australian* wheat, from Edenburg, Orange Free State."

42395. "No. 5. *Klein Rooi Koren*."

42396. "No. 6. *Defiance*, from Edenburg, Orange Free State."

42397. "No. 7. *Baard Koren*, from Melkbosch, Bethanie district."

42390 to 42427—Continued.

42398. "No. 8. *Red Egyptian* (generally known as *Stromberg Rooi Koren*), from Ligton."

42399. "No. 9. *Transvaal Wol*, from Tagelberg, Bethulie district."

42400. "No. 10. *Talawair*, from Kleinzuurfontein."

42401. "No. 11. *Celliers* or *Cilliers*, from Hammonia, Orange Free State."

42402. "No. 12. *Wit Baard Koren*, from Hammonia, Orange Free State."

42403. "No. 13. *Rustproof*, from Zastron."

42404. "No. 15. *Ou Baard* (late), from Kleinzuurfontein."

42405. "No. 16. *Gluyas* (early)."

42406. "No. 17. *Rooi Kaal Koren*, from Treurfontein, Fauresmith."

42407. "No. 19. *Sibies Koren*, from Fauresmith."

42408. "No. 20. *Klein Koren*, from Bethulie district."

42409. "No. 21. *Wolhuter* wheat."

42410. "No. 60. *Ekstein*, from Holland Posthmus."

42411. "No. 61. Spring wheat, from Holland Posthmus."

42412. "No. 62. *Bob's* wheat, from H. Stubbs, Corunna."

42413. "No. 63. *White Australian* wheat or *Hoffman's*, from H. Stubbs, Corunna."

42414. "No. 67. *Delaware* wheat, from H. J. Joubert, Middelfontein, Bethulie district."

42415. "No. 69. *Primrose*, from Burghersdorp."

42416. "No. 70. Early spring, from Burghersdorp."

42417. "No. 71. *Bosjesveld*, from Burghersdorp."

42418. "No. 77. *Wol Koren* (grown without water), from J. J. Badenhorst, Verliespan, P. O. Dewetsdorp, Orange Free State."

42419. "No. 79. *Geluks Koren* (grown without water), from M. L. Badenhorst, Klipfontein, P. O. Dewetsdorp, Orange Free State."

42420. "No. 80. *Baard Koren* (grown without water), from J. J. Badenhorst, Verliespan, P. O. Dewetsdorp, Orange Free State."

42421. "No. 81. *Rooi Els* wheat, from A. E. Shore, Kalkfontein, P. O. Dewetsdorp, Orange Free State."

42422 to 42425. TRITICUM DURUM Desf. Poaceæ. **Durum wheat.**

42422. "No. 72. *Media* wheat, from Burghersdorp."

42423. "No. 2. *Blue Beard*, from Klipfontein, P. O. Austens Port."

42424. "No. 74. *Golden Ball*, from W. H. Webster, Vaalbank, P. O. Dewetsdorp, Orange Free State."

42425. "No. 65. *Bengal* wheat or *Zwartbaard*, from P. v. Aardt, Brockpoort."

42426. TRITICUM TURGIDUM L. Poaceæ. **Poulard wheat.**

"No. 66. *Ijzervark*, from H. J. Joubert, Middelfontein, Bethulie district."

42427. SECALE CEREALE L. Poaceæ. **Rye.**

"No. 22."

42428. Berberis fremontii Torr. Berberidaceæ. Barberry.

From Tucson, Ariz. Presented by Mr. J. J. Thornber, Agricultural Experiment Station. Received April 5, 1916.

Small, unarmed shrub, 5 to 10 feet high, with two or three pairs of somewhat spiny leaflets, the lowest pair close to base of petiole; yellow flowers, and dark-blue ovate berries. Occurring somewhat rarely in canyons from southwestern Colorado to Mexico.

For previous introduction, see S. P. I. No. 41764.

42429. Cassia angustifolia Vahl. Cæsalpiniaceæ. Senna.

From Khartum, Sudan, Africa. Presented by Mr. R. Hewison, Department of Agriculture and Forests. Received April 4, 1916.

"Obtained by Mr. Wood, Assistant Director of Forests." (*Hewison.*)

A small shrub, native to Arabia and east Africa and largely cultivated in parts of southern India. It furnishes *Tinnivelly* senna, the best known variety of this medicinal product. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, 2d ed., p. 536.*)

For previous introduction, see S. P. I. No. 41282.

42430 to 42434.

From Brazil. Collected by Mr. H. M. Curran.

42430. Basella rubra L. Basellaceæ. Red basella.

"No. 115. *Berthala.* Cultivated vine, leaf and stem edible, fruits yield purple dye. Barra do Rio Contas, Bahia, Brazil, November, 1915." (*Curran.*)

An annual or biennial herb, cultivated in the Tropics as a potherb. It is remarkably variable, and several forms have been described under different specific names. It has bisexual white, red, or violet flowers. The form usually considered as *Basella rubra* is said to yield a rich purple dye, but it is difficult to fix. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 455.*)

42431. Erythroxylon sp. Erythroxylaceæ.

"No. 40."

42432. Helicteres ovata Lam. Sterculiaceæ. Rosca.

"No. 345."

A small tree or shrub with simple ovate leaves and flowers in small axillary clusters. The wood is utilized for posts and fuel, and the bark furnishes material for the manufacture of paper; the roots are used medicinally. (Adapted from *Correa, Flora do Brazil, p. 64.*)

For previous introduction, see S. P. I. No. 36706.

42433. Mimosa sp. Mimosaceæ.

"No. 79."

42434. Schizolobium parahybum (Vell.) Blake. Cæsalpiniaceæ. (*S. excelsum* Vog.) Bacarubú.

"No. 13."

42430 to 42434—Continued.

A very large, quick-growing tree, with fine feathery leaves. Native to Brazil. The flowers, of a bright yellow color, are borne in large, erect racemes in February or March when the tree is bare of leaves. The flowers are at once followed by beautiful, young, feathery foliage. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, 2d ed., p. 300.*)

42435 to 42443.

From Petrograd, Russia. Presented by Dr. A. A. Fischer de Waldheim, director, Royal Botanic Garden. Received April 6, 1916.

42435. Acer ginnala semenovii (Regel and Herd.) Pax. Aceraceæ. **Maple.**

"Collected by Miss Zinaida ab Minkwitz in Turkestan in 1914."

A graceful shrub of bushy habit, with glossy, dark-green, deeply 3 to 5 cut leaves and long peduncled panicles of rather fragrant yellowish flowers. The foliage turns a beautiful red in late summer. It is reported hardier than any of the Japanese maples. Native to Russia. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 200.*)

For previous introduction, see S. P. I. No. 34784.

42436. Acer trautvetteri Medw. Aceraceæ. **Maple.**

"Collected by J. W. Palibin in the Caucasus in 1914."

A tree up to 50 feet in height and 6 feet in girth of trunk, with smooth branches and deeply five-lobed leaves, 4 to 8 inches wide, and about three-fourths as long, dark, lustrous green, smooth above, somewhat paler beneath. It is a handsome foliage tree, native of the Caucasus and Persia, and is distinguished in spring by its brilliant crimson bud scales. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 160.*)

For previous introduction, see S. P. I. No. 32975.

42437. Carpinus orientalis Mill. Betulaceæ. **Oriental hornbeam.**

"Collected by J. W. Palibin in the Caucasus in 1914."

A small tree or large shrub with small ovate leaves up to 2 inches long and 1 inch wide, dark glossy green above. Native to southeastern Europe and Asia Minor. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 296.*)

42438. Fagus orientalis Lipsky. Fagaceæ. **Beech.**

"Collected by J. W. Palibin in the Caucasus in 1914."

A large perennial tree with elliptic or oblong nearly entire leaves. Native from Asia Minor to northern Persia. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1203.*)

For previous introduction, see S. P. I. No. 27662.

42439. Prunus prostrata Labill. Amygdalaceæ. **Mountain cherry.**

"Collected by Miss Zinaida ab Minkwitz in Turkestan in 1914."

A deciduous shrub 2 to 3 feet high, of low, spreading habit, measuring much more in width than it does in height. Flowers one-half to three-fourths of an inch across, produced singly or in pairs. Petals of a lively rose color. Fruit red, one-third of an inch long. Native of the mountains of the Levant, where it usually makes a close, stunted bush, very unlike the rather free-growing plant seen in this country. It needs a

42435 to 42443—Continued.

sunny position, and is admirably suited on some roomy shelf in the rock garden fully exposed to the sun. In such a position, following a hot summer, it flowers profusely enough to almost hide its branches. It is perfectly hardy at Kew. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 248.*)

For previous introduction, see S. P. I. No. 40815.

42440. PRUNUS SPINOSISSIMA (Bunge) Franch. Amygdalaceæ. **Wild almond.**

"Collected by Miss Zinaida ab Minkwitz in Turkestan in 1914."

A wild, shrubby almond found between stony débris in the hot and dry mountain regions of Russian Turkestan. May be experimented with for the following purposes: As a drought-resistant stock for almonds and peaches, as a possible drought-resistant nut tree, as an ornamental tree or hedge plant in desert regions, and as hybridization material. (Adapted from *F. N. Meyer.* See *Inventory 31, p. 13.*)

For previous introduction, see S. P. I. No. 33312.

42441. TAMARIX FLORIDA ALBIFLORA Bunge. Tamaricaceæ. **Tamarisk.**

A leafless shrub with pale reddish purple bark, graceful green twigs, and white flowers. (See *Bunge, Tentamen Generis Tamaricum, p. 38.*)

42442. TAMARIX KARELINI HIRTA Litv. Tamaricaceæ. **Tamarisk.**

A glaucous Tamarix, with purplish brown bark, stiff branchlets, and intense purple flowers. (See *Bunge, Tentamen Generis Tamaricum, p. 68.*)

For previous introduction, see S. P. I. No. 39627.

42443. TAMARIX PENTANDRA Pall. Tamaricaceæ. **Tamarisk.**

Received as *Tamarix pallasii* Desv., var. *macrostachys* Bunge.

"This shrub or small tree is one of the most decorative tamarisks in cultivation, flowering in great profusion in July and August. In the wild state it ranges from the Balkan Peninsula through southern Russia to Turkestan and from Asia Minor to Persia, adorning the banks of rivers, particularly in their lower reaches and estuaries. Like other species of this genus, it thrives well in saline soils, but is by no means dependent on a more than ordinary amount of salts in the ground. The flowers are usually rose colored, but sometimes white or nearly so." (*Curtis's Botanical Magazine, pl. 8138.*)

For previous introduction, see S. P. I. No. 39692.

42444 to 42448. MESEMBRYANTHEMUM spp. Aizoaceæ. **Fig marigold.**

From San Francisco, Calif. Presented by Mr. John McLaren, Golden Gate Park. Received April 12, 1916. Plants of the following:

42444. MESEMBRYANTHEMUM AEQUILATERALE Haw.

A succulent plant with stems several feet in length and thick fleshy leaves, spreading out over the ground in large mats and growing luxuriantly on dry barren rocky places and sandy plains. Flowers are fragrant and showy, of a bright rose-purple color, and about 2 inches across. This species is native to Australia, Tasmania, Chile, and California. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2041.*)

42444 to 42448—Continued.

42445. MESEMBRYANTHEMUM BICOLOR L.

Shrub 2 to 3 feet high, having straight, upright, stiff twigs with grayish brown bark. Leaves on the long shoots scattered, only clustered on the short shoots, about as long as the internodes. Flowers in twos, or only one, about 3½ cm. broad, yellow within and crimson on the outside. A native of Cape Colony on the sandy plains near Cape Town. (Adapted from *Alwyn Berger's Mesembrianthemen, p. 152.*)

42446. MESEMBRYANTHEMUM FLORIBUNDUM Haw. **Ice plant.**

A succulent plant, tortuous in growth, with branches not over 6 inches long, and more or less decumbent; leaves less than 1 inch long, very narrow, terete, curved, obtuse, a little thicker toward the apex; stems and leaves bearing glittering papillæ; stems bristly; flowers small, rose colored, the petals being twice as long as the calyx. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2043.*)

42447. MESEMBRYANTHEMUM PUGIONIFORME L.

Stems upright, 15 to 30 cm. long and 1 to 2 cm. in diameter, simple, rarely branched, with rough brownish green bark. Leaves in thick tufted rosettes, standing upright and incurved, the older bent back, 15 to 20 cm. long, linear, sword shaped, long pointed. Flowering stems rising laterally from the leafy rosettes, soon dying, distinctly leaved, one to three flowers. Flowers up to 7 cm. broad, open in the afternoon, malodorous. Native to Cape Colony. (Adapted from *Alwyn Berger's Mesembrianthemen, p. 217.*)

42448. MESEMBRYANTHEMUM SPECTABILE Haw.

A succulent plant with prostrate stems but ascending branches; leaves 2 to 3 inches long, crowded, glaucous, incurved and spreading, triquetrous with equal sides, attenuate and mucronate; flowers purplish, petals 1 inch long, the inner ones somewhat shorter. Grows on dry, barren, rocky places and dry sandy plains. Native to Cape Colony regions. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2042.*)

42449. SPIRAEA WILSONI Duthie. Rosaceæ.

From Jamaica Plain, Mass. Cuttings presented by the Arnold Arboretum. Received April 5, 1916.

"*Spiraea wilsoni* is closely allied to, perhaps only a variety of, *S. henryi.* It is distinguished, among other points, by its smooth ovary and smooth or slightly silky flower stalks. Leaves of flowering shoots entire, downy above, duller green." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 535.*)

For previous introduction, see S. P. I. No. 37611.

42450. COLOCASIA ESCULENTA (L.) Schott. Araceæ. **Taro.**

From Glenwood, Hawaii. Tubers presented by Mr. J. B. Thompson, superintendent, Glenwood substation. Received April 11, 1916.

"*Kuoho.* An upland taro. This variety was grown quite commonly around Hilo at the time of my visit to Hawaii in 1913 and was considered to be one of the best. The corms and tubers are very acrid in the raw state and require longer cooking to destroy the acridity than is necessary to cook them to a soft, mealy condition. The quality is good when the taro is thoroughly cooked." (*R. A. Young.*)

42451. ZEA MAYS L. Poaceæ. Corn.

From Salmon Arm, Canada. Presented by Mr. Thomas A. Sharpe. Received April 10, 1916.

"Seed of a very fair flint corn which has ripened here for two years, from seed received from the Agricultural College at St. Anne, Province of Quebec." (*Sharpe.*)

42452 and 42453.

From Zacuapam, Huatusco, Mexico. Presented by Dr. C. A. Purpus. Received April 12, 1916.

42452. CACARA EROSA (L.) Kuntze. Fabaceæ. **Yam-bean.**
(*Pachyrhizus angulatus* Rich.)

"The young root is much like a turnip in shape and consistency and is easily peeled like a turnip. It is usually eaten raw and may be prepared with oil and vinegar in the form of a salad. According to Dr. Edward Palmer it is extensively cultivated in Mexico, where the natives pinch off the blossoms and seed pods, giving as a reason that if the seeds are allowed to mature the roots are not good. In Mexico the roots are much eaten raw, but are also pickled, boiled in soup, and cooked as a vegetable. As they come from the ground they are crisp, sweet, juicy, and of a nutty flavor. They are nourishing and at the same time quench the thirst, so that they are much liked by travelers. One way of preparing the raw roots is to cut them in thin slices and sprinkle sugar over them. They may also be boiled and prepared with batter in the form of fritters, and in Mexico they are often minced or grated and, with the addition of sugar, milk, eggs, and a few fig leaves for flavoring, made into puddings." (*W. E. Safford.*)

For previous introduction, see S. P. I. No. 22971.

42453. GOSSYPIUM sp. Malvaceæ. **Cotton.**

"Raised from seed from Oaxaca, dry country without irrigation." (*Purpus.*)

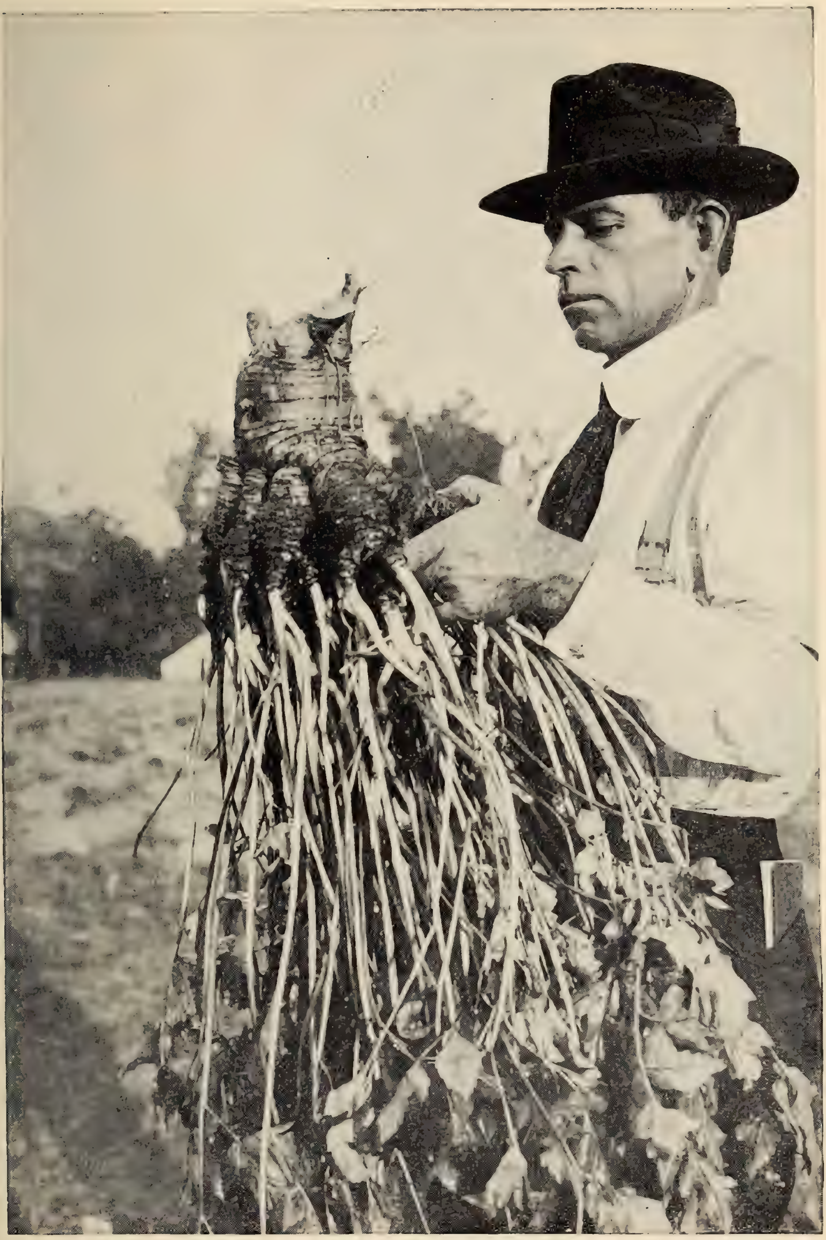
42454. CICER ARIETINUM L. Fabaceæ. Chick-pea.

From Malaga, Spain. Presented by Mr. Thomas R. Geary, American vice consul. Received April 5, 1916.

"Seeds of the most productive variety in this district." (*Geary.*)

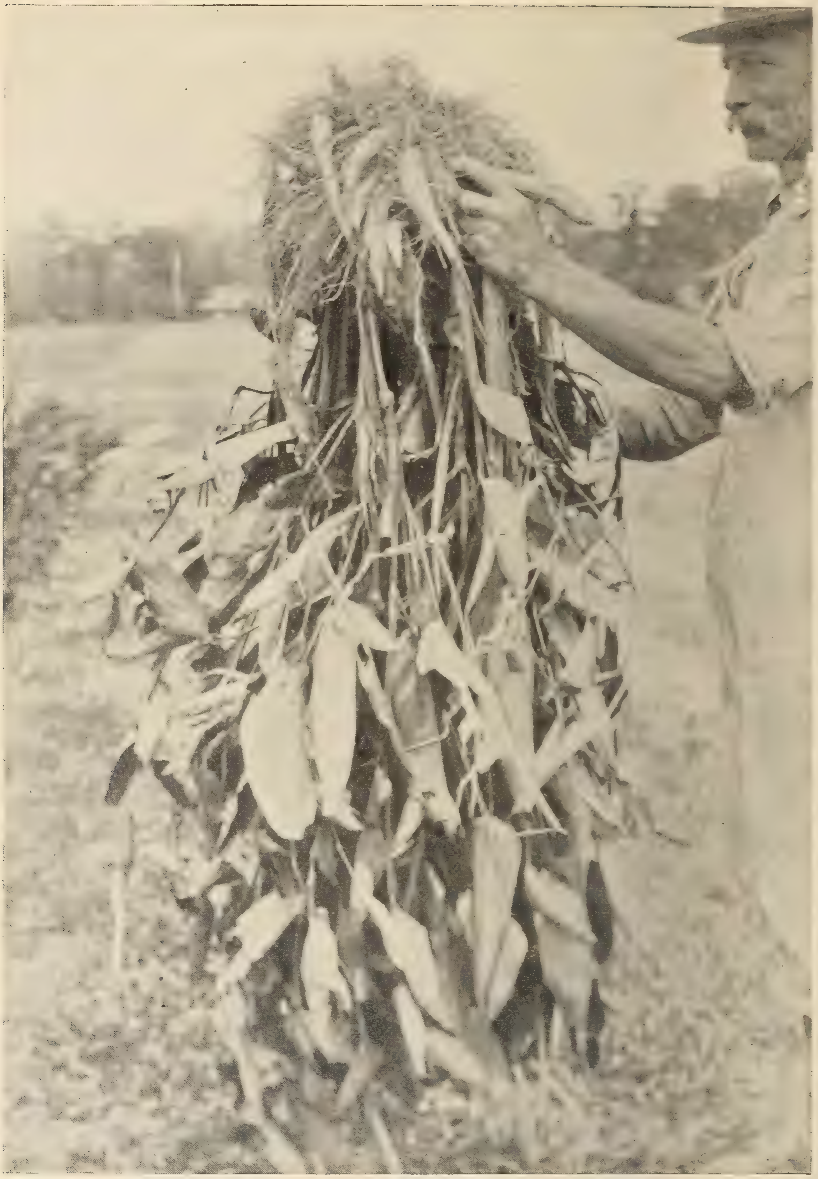
"*Hamus, gram, garbanzo.* An annual plant growing from 12 to 18 inches in height, cultivated extensively in India, southern Europe, and Mexico. The seeds, two to three, which resemble somewhat the pea, are borne in short pods. They are used as an article of food, parched or toasted, and also ground into a meal that in many respects resembles corn meal. This plant is especially well-adapted for cultivation in our semiarid States." (*Peter Bisset.*)

"In Jerusalem chick-peas are eaten prepared in the following way: The dry chick-pea is put in an earthen jar with water; the cover is then cemented on with dough or cement, and the whole jar placed in the furnace of a Turkish bath and covered with ashes. It is usually kept in the furnace from 4 o'clock in the afternoon until the next morning. This method of cooking the chick-pea is better than boiling. When the peas are done they are manipulated with the fingers until all the outside skin comes off; they are then put in a bowl



THE ARRACACHA, A FAVORITE VEGETABLE OF THE VENEZUELANS, WHICH APPEARS TO BE ADAPTED TO THE WARMER PARTS OF THE UNITED STATES. (ARRACACIA XANTHORRHIZA BANCR., S. P. I. NO. 42455.)

The whole root is tender and edible. It is generally boiled and mashed like the potato or used in soups like parsnips, to which it is closely allied, but is more delicate in flavor than either. The clump shown is two seasons old, but clumps of a similar size are produced in a single season. The plant has flowered in Florida this season for the first time. (Photographed by David Fairchild at the Plant Introduction Field Station, Brooksville, Fla., Nov. 25, 1918; P24598FS.)



BERMUDA ARROWROOT, A STARCH PRODUCER OF IMPORTANCE. (MARANTA ARUNDINACEA L., S. P. I. NO. 42463.)

A single clump of arrowroot. The rootstocks are said to contain from 15 to 25 per cent of a starch that is considered to be very easily digested and is generally recommended for invalids who find difficulty in digesting other starches. The yield is estimated at from 1,600 to 2,000 pounds of starch to the acre. A considerable arrowroot industry exists in Bermuda and St. Vincent. The exports from the latter island amounted to over $100,000 in 1916. The possibilities of its culture in parts of Florida are being investigated. They are largely questions of yield and labor. (Photographed by David Fairchild at the Plant Introduction Field Station, Brooksville, Fla., Nov. 20, 1918; P24644FS.)

and mashed until they become quite creamy, adding, if necessary, a small quantity of the water in which they are cooked. This creamy substance is then usually flavored with a little garlic and salt; and melted butter, into which pine seeds are thrown and browned, is added. This is eaten as a breakfast food with fresh bread, the bread being dipped in the 'cream.' The 'cream' is also eaten with green and red peppers and radishes. The native name for this 'cream' is *hummus-imdamas*. In Jaffa horse beans are prepared in the same way. Olive oil, which is cheaper than butter, is used to some extent instead of butter in Egypt and also in Jaffa." (*Whiting.*)

42455. ARRACACIA XANTHORRHIZA Bancroft. Apiaceæ. **Arracacha.**

From La Guaira, Venezuela. Roots presented by Mr. Homer Brett, American consul. Received April 12, 1916.

An umbelliferous plant, native of the South American Andes, growing only at heights of 4,000 feet and upward. The plant is a biennial and develops a large yellowish root the size of the common beet, or perhaps larger. The growing plants resemble celery, and the Spanish name *apio*, meaning celery, is often applied to it for this reason. The large fleshy root is developed in the first year and, being edible, is used before the tall flower stem appears. This root is eaten boiled, like parsnips, or sliced raw and fried, like potatoes, being very palatable either way. A good alcohol may be made from the juice of the root. For propagation, cuttings are made with a couple of inches of the fleshy root attached, the fleshy end being placed about 2 inches deep in the top of the hill. The plant requires rain or irrigation at least every month, and as it grows the earth is hilled up, care being exercised not to heap the earth against the trunk of the plant. (Adapted from *Handbook of Venezuela, Bureau of American Republics, 1904.*)

For an illustration of the arracacha plant, see Plate I.

42456 to 42458. CICER ARIETINUM L. Fabaceæ. **Chick-pea.**

From Jerez de la Frontera, Spain. Presented by Mr. Paul H. Foster, American consul. Received April 5, 1916. Descriptive notes by Mr. Foster.

42456. "*Garbanzo de Castilla.* This is the largest and finest sort produced in Spain, but the yield is not so heavy as of the other varieties."

42457. "*Garbanzo del Pais.* Smaller in size and not so tender as that of Castilla [S. P. I. No. 42456], but locally it produces fair quantities under semiarid conditions."

42458. "*Garbanzo Negro*, or black chick-pea. Produces well under semiarid conditions. Used locally for stock feed, as a rule; but the poorer classes of peasants in the country use it for food when other sorts are scarce and high priced. Said to be very nourishing and fattening when used for stock feeding. This sample was kindly furnished me by Mr. Walter J. Buck, H. B. M. vice consul."

42459 to 42462. CICER ARIETINUM L. Fabaceæ. **Chick-pea.**

From Madrid, Spain. Presented by Mr. Robertson Honey, American consul. Received April 5, 1916.

See S. P. I. No. 42454 for previous introduction and description.

42459. Variety A.

42460. Variety B.

42461. Variety C.

42462. (Mixed when received.)

42463. Maranta arundinacea L. Marantaceæ. **Arrowroot.**

From Kingston, Jamaica. Tubers presented by Mr. W. Harris, superintendent, Hope Gardens. Received April 15, 1916.

"The true arrowroot is a native of tropical America. The arrowroot is a perennial herb with large lanceolate leaves and white rootstocks or rhizomes 1 to 2 feet in length and 1 to 2 inches in diameter. The plant is propagated by divisions of the rhizomes in rows 3 feet apart and 1 foot apart in the row. The tubers may be harvested about 8 to 12 months from the time of planting. A good yield of arrowroot is 5 tons of tubers per acre. The tubers contain 25 per cent starch. The yield of prepared arrowroot per acre is about 1,500 pounds. Arrowroot starch may be obtained by grating, washing, and straining the tubers by the method used with cassava. Like cassava, also, the plant seems to exhaust the soil quickly, thus making necessary a system of rotation. The best quality of arrowroot comes from Bermuda, but the largest supply is received from St. Vincent, Barbados, and Ceylon. Arrowroot starch is considered to be very easily digested and is generally recommended for invalids who have found difficulty in digesting the starch from potatoes and other plants." (*Wilcox, Tropical Agriculture, p. 151.*)

For an illustration of the Bermuda arrowroot plant, see Plate II.

42464 to 42469.

From Brisbane, Australia. Presented by Mr. J. F. Bailey, Botanic Gardens. Received April 4, 1916.

42464. Careya australis (Benth.) F. Muell. Lecythidaceæ.

A large tree with alternate undotted leaves, large red flowers, and globular, fleshy, edible fruit with a hard rind. The bark is made into twine, and the wood, which is of a light-gray color, red in the center, close in grain, and tough, is easily worked. (Adapted from *Bailey, Queensland Flora, p. 667.*)

42465. Eremocitrus glauca (Lindl.) Swingle. Rutaceæ.
(*Atalantia glauca* Benth.) Australian desert kumquat.

An edible-fruited shrub or small tree, occurring in Queensland, and New South Wales in subtropical regions subject to severe cold and extreme drought. Small, emarginated leaves, subglobose, flattened, or slightly pyriform fruits; small seeds. An 'ade is made from the juice, and the fruits are good for making jam or pickles. It is the hardiest evergreen citrus fruit known and the only one showing pronounced drought-resistant adaptations. (For fuller description, see *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1127.*)

42466. Erythrina vespertilio Benth. Fabaceæ. Coral tree.

A soft-wooded tree found in Queensland and in North, South, and Western Australia, growing to a height of 30 to 40 feet, with a diameter of 1 to 2 feet. The wood is used by the aborigines for making their "hielamans," or shields, being exceedingly light and spongy. Might possibly be used for making floats for fishing nets. Called *hielaman* tree or batswing coral. (Adapted from *Maiden, Useful Plants of Australia, p. 426.*)

42467. Eucalyptus miniata A. Cunn. Myrtaceæ.

A moderate-sized or large tree, the bark fibrous and persistent, but readily separable in flakes, the young shoots sometimes glaucous or mealy white. Leaves ovate-lanceolate or lanceolate, acuminate, mostly

42464 to 42469—Continued.

4 to 6 inches long. Peduncles axillary or lateral, very thick and broad, more or less flattened, one-half to 1 inch long, with about five to seven rather large closely sessile flowers. Stamens richly colored, nearly half an inch long, inflected in the bud; anthers oblong with distinct parallel cells. Ovary short, flat topped. Fruit ovoid or urceolate, very thick and hard, more or less prominently ribbed, 1 to nearly 2 inches long, the rim rather thick, the capsule deeply sunk. (Adapted from *Bentham, Flora Australiensis, vol. 3, p. 228.*)

42468. MACADAMIA MINOR F. M. Bailey. Proteaceæ.

A large shrub or small tree with slender branches; three-parted leaves, often crowded at the end of the branches; and nuts about seven-eighths of an inch long and three-fourths of an inch in diameter. A native of Queensland. (Adapted from *F. M. Bailey, Queensland Agricultural Journal, vol. 25, p. 11, 1910.*)

42469. SYNCARPIA HILLII F. M. Bailey. Myrtaceæ. Turpentine tree.

A myrtaceous tree from Frazer's Island, North Queensland, having wood of a dark-pink color, close grained, and tough, being useful for building purposes. (Adapted from *Bailey, Proceedings of the Royal Society of Queensland, vol. 1, p. 86,* and *Maiden, Useful Native Plants of Australia, p. 602.*)

42470 to 42475.

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received April 8, 1916.

42470. UVARIA RUFA (Dunal) Blume. Annonaceæ.

"*Banauac; Susong calabao.* Fruits of this species are oblong, reniform, 3 sometimes 4 centimeters in length, in bunches of 18 to 20, averaging 115 grams in weight; surface bright red, velvety, ferruginous pubescent; skin thin, brittle; flesh scant, whitish, juicy, aromatic, subacid, without a trace of sugar; quality rather poor; seeds many. Season, September." (*Wester, Philippine Agricultural Review, p. 321, July, 1913.*)

For previous introduction, see S. P. I. No. 34522.

42471 to 42475. HIBISCUS SABDARIFFA L. Malvaceæ. Roselle.

42471. "*Rico.* The young plants of the Rico retain their unifoliolate leaf characters longer than the *Victor* [S. P. I. No. 42473], and later are mostly tripartite instead of five parted. The stems and calyces are dark red and the leaves dark green with reddish veins. The calyx is of about the same length as the *Victor*, but of greater equatorial diameter; the fleshy spines subtending the calyx lobes are stout and stand at nearly a straight angle from the axis of the fruit; the apex of the calyx lobes is frequently incurved. The *Rico* has been named and described from plants grown from seed obtained by the writer in 1911 from Mr. J. E. Higgins, horticulturist of the Hawaii Agricultural Experiment Station, and has probably descended from a variety grown in 1902 at the Agricultural Experiment Station, Mayaguez, Porto Rico, by Mr. O. W. Barrett." (*Wester, Philippine Agricultural Review, p. 126, March, 1912.*)

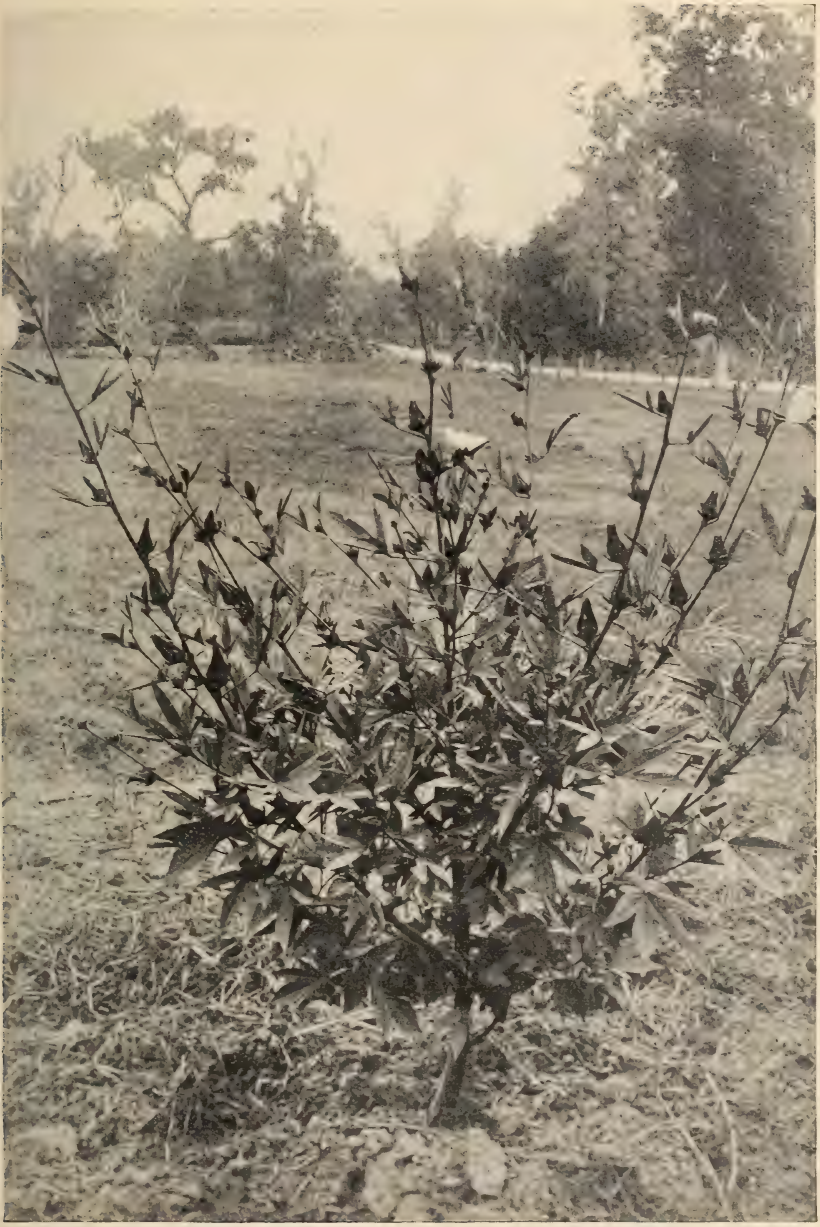
42470 to 42475—Continued.

42472. "*Archer.* Plant robust, frequently exceeding 1.6 meters in height, branching freely, all parts of the plant being greenish or whitish; stems nearly smooth; leaf lobes rather narrow; flowers smaller than those in the red types; eye yellowish; pollen pale yellow, stigma green; full-grown calyx greenish white, sparsely covered with short, stiff bristles; average length of calyx, 45 millimeters; width, 26 millimeters; including epicalyx, 32 millimeters. The *Archer* is very prolific, and the fruit is somewhat less acid than those of the red types, and the products made from it are whitish or amber colored. In the West Indies a wine is made from this variety that is said to resemble champagne in taste and appearance. Seed of the above-described variety was received from Mr. A. S. Archer, Antigua, British West Indies, by the writer early in 1913, and it was tested in the Lamao experiment station the same year. It has been named in honor of Mr. Archer, with whom the writer has had the privilege of being in correspondence for many years and who has greatly assisted the Bureau of Agriculture in the introduction of many useful and decorative tropical American plants. The green type of roselle, to which the *Archer* belongs, was described as *Hibiscus digitatus* by Cavanilles in 1790, but it is now considered to be a form of *H. sabdariffa* L." (*Wester, Philippine Agricultural Review, p. 268, June, 1914.*)

42473. "*Victor.* This variety is distinguished by having the unifoliolate leaves of the young plant change early into leaves deeply five lobed, these leaf characters remaining until the flowering period, when the leaves become three parted or again unifoliolate. The stems and calyces are reddish. The calyces average about 45 to 50 millimeters in length and 28 millimeters in equatorial diameter, tapering toward the apex; the calyx lobes are frequently convolute, and the fleshy spines subtending the calyx lobes are longer and more slender than in the *Rico* [S. P. I. No. 42471] and are curved upward. The *Victor* is more upright in habit than the *Rico* and somewhat earlier in fruiting, due probably to its having been cultivated in Florida for several years." (*Wester, Philippine Agricultural Review, p. 126, March, 1912.*)

For illustrations of the roselle plant and fruits, see Plates III and IV.

42474. "*Temprano.* Plant of medium vigor and upright growth, branching profusely, rarely exceeding 1.25 meters in height; stems light red; leaves palmately five lobate, with conspicuously narrow lobes; flowers normal; pollen golden brown; calyx of the same general form as that of the *Victor* [S. P. I. No. 42473], but smaller; average length, 45 mm., width, 25 mm., with epicalyx, 39 mm. The variety is prolific and the fruiting season is 20 days earlier than *Victor* and *Rico*. When the *Victor* fruited for the first time at Lamao in 1911, one plant was conspicuous for its earliness, and the seed was saved from this plant and sown the following year. The early trait of the parent tree was transmitted to the progeny, and the earliest plant was again isolated and the seed sown in 1913. In harvesting the fruit and seed of the third generation, the early habit and other characteristics that distinguish this new strain



A ROSELLE PLANT IN FLOWER AND FRUIT. (HIBISCUS SABDARIFFA L., S. P. I. No. 42473.)

Although the roselle is an all-round producer, the leaves being used for boiled greens in Hawaii and in curries in India, the seed being commonly used as poultry feed, and the bark having been used extensively in India for its fiber, its chief value at present seems to be in the use of the fleshy calyxes for making a delicious jelly or sauce. Its large yellow flowers and deep crimson stems and flower buds make it a striking shrubby perennial worthy a place in southern gardens. (See Plate IV.) (Photographed by R. A. Young at the Plant Introduction Field Station, Brooksville, Fla., Nov. 18, 1918; P24405FS.)

A Basketful of Premier Jelly Producers, Fruits of the Roselle Plant. (Hibiscus sabdariffa L., S. P. I. No. 42473.)

Only a part of the fruit is used, the thick fleshy calyx, the juice of which has a beautiful wine-red color and makes an excellent jelly or jam with a flavor somewhat resembling that of the cranberry, but which is perhaps more delicate. (Photographed by E. C. Crandall in the photographic laboratory Dec. 9, 1916; P20139FS.)

42470 to 42475—Continued.

from its parent, the *Victor*, seem to be sufficiently well fixed to merit it recognition as a separate variety, and it has been named *Temprano* on account of its early habit. The *Temprano* is more subject to leaf-blight than any of the varieties mentioned in this paper, and therefore, on account of its deficiency in vigor, it is not recommended for planting on a large scale. In fact, the *Temprano* is of more value in a subtropical than a tropical country, where early frosts at the approach of the cold season destroy the ordinary varieties before their fruiting season is over." (*Wester, Philippine Agricultural Review, p. 267, June, 1914.*)

42475. "*Hybrid.*"

42476. Rubus sp. Rosaceæ.

From Mobile, Ala. Plants presented by Mr. G. R. McKenzie, landscape gardener. Received April 17, 1916.

"*Family Delight.* Pink berry bush. This berry was found in the woods near Citronelle, Ala. I think it is a cross between the raspberry and blackberry. It makes a good hedge; a hedge 50 feet long planted in the fall of 1910 is 9 feet high and gives us from 2 to 5 quarts of berries a day for about six weeks. My family like the berries much better than they do strawberries. It makes the finest kind of jelly and jam, and as a fresh fruit it is hard to beat." (*McKenzie.*)

42477 to 42519. Vitis spp. Vitaceæ. **Grape.**

From Palermo, Italy. Cuttings received through Mr. F. Paulsen, director, Regio Vivaio di Viti Americane, at the request of the Superior Minister of Agriculture, April 14, 1916. Quoted notes from Dr. Grimaldi, in La Viticoltura Moderna.

In 1904, Dr. Clemente Grimaldi wrote concerning his work on the hybridization of grapes: "Notwithstanding the labors given for almost 15 years to hybridization, I have believed that I should maintain the utmost reserve in publishing the hybrids, and until now I have made known only six, all stocks, which are the following: Nos. 50, 88, 125, 791, 110, and 323." Later in the same article he wrote: "Among the hybrids obtained by me the following at present give me the hope that they will be of service as direct producers," and he lists Nos. 88, 97, 317, 953, 1075, and 1132.

These hybrids were requested at the suggestion of Dr. Gustav Eisen, and they represent some of the best results obtained from the hybridization of American species of Vitis with *Vitis vinifera* strains of Italian origin for the purpose of securing varieties resistant to Peronospora and other diseases. Of the Ruggeri and Paulsen hybrids descriptions have not been accessible, but have probably appeared in later volumes of La Viticoltura Moderna.

42477. "Paulsen hybrid No. 2 A (*Riparia* × *Rupestris*)."

42478. "Ruggeri hybrid No. 19."

42479. "Grimaldi hybrid No. 88."

"*Calabrian* × *Rupestris Ganzin* (published in 1889). Extremely vigorous, fertile, with the appearance of *Rupestris;* shoots very large, short and branched. Adaptability to lime similar to Grimaldi hybrid No. 50 (*Calabrian* × *Azemar*), as shown by its behavior in the lime plat (oasi

42477 to 42519—Continued.

calcare) of the experiment station; very drought resistant. Produces abundant and good red grapes." (*La Viticoltura Moderna, vol. 10, p. 274, 1904.*)

"Fruiting abundantly when adult; medium bunches with medium seed, not very compact. Grapes sweet, maturing early." (*La Viticoltura Moderna, vol. 10, p. 276, 1904.*)

"Grimaldi hybrid No. 88 selected."

"*Calabrian* × *Rupestris Ganzin.* Red grapes. Most vigorous and very fruitful; bunches crowded, winged, 18 cm. in length, blooming twice, seeds round, diameter 14 mm.; pulp white, sweet, skin lightly colored red, early maturing." (*La Viticoltura Moderna, vol. 14, p. 145, 1907.*)

This number consists of two varieties, Nos. 88 and 88 selected, which were mixed by mistake.

42480. "Grimaldi hybrid No. 97."

"*Calabrian* × *Rupestris Ganzin.* Red grapes. Very vigorous and productive when full grown; bunches medium, not very compact, seeds small. Grapes sweet, maturing late." (*La Viticoltura Moderna, vol. 10, p. 276, 1904.*)

42481. "Grimaldi hybrid No. 110."

"*Calabrian* × *Rupestris Ganzin* (published in 1902). Very vigorous and a very rapid grower. Bunches not very numerous, small, somewhat winged, with few seeds." (For full description and plate, see *La Viticoltura Moderna, vol. 11, pp. 167–170, 1904.*)

42482. "Ruggeri hybrid No. 193. *Berlandieri* × *Riparia.*"

42483. "No. 125."

42484. "Ruggeri hybrid No. 140."

"*Berlandieri* × *Rupestris du Lot.* Affinity complete, vegetation vigorous, production normal." (*La Viticoltura Moderna, vol. 15, p. 108, 1909.*)

42485. "Ruggeri hybrid No. 188. *Berlandieri* × *Riparia.*"

42486. "Ruggeri hybrid No. 199. *Berlandieri* × *Riparia.* Affinity complete, vegetation vigorous, productivity most abundant. Takes the graft in a marvelous manner."

42487. "Ruggeri hybrid No. 225. *Berlandieri* × *Riparia.*"

42488. "Ruggeri hybrid No. 267. *Berlandieri* × *Riparia.*"

42489. "Ruggeri hybrid No. 300. *Berlandieri* × *Riparia.*"

42490. "Grimaldi hybrid No. 317. *Frappato* × *Rupestris Ganzin.* White grapes; very vigorous, moderate bearer, bunches medium, somewhat few seeded, seeds medium, grapes very sweet, maturing late." (*La Viticoltura Moderna, vol. 10, p. 276, 1904.*)

42491. "Grimaldi hybrid No. 323. *Frappato* × *Rupestris Ganzin* (published in 1902). I decided to publish these two hybrids (Nos. 110 and 323) because of their excellent quality, their affinity with our variety, and their very great vigor. Their resistance to drought is extremely high. The resistance to chlorosis in both is scarcely inferior to that of the first three hybrids (Nos. 50, 88, and 125)." (*La Viticoltura Moderna, vol. 10, p. 275, 1904.*)

42477 to 42519—Continued.

42492. "Grimaldi hybrid No. 480."

42493. "Grimaldi hybrid No. 533."

42494. "Grimaldi hybrid No. 722. *Berlandieri* × *Tremano.* Seed of 1904. It is characterized by its vigor and by the precocity of its development, and has all the other merits of Nos. 446 and 528." (*La Viticoltura Moderna, vol. 14, p. 144, 1907.*)

42495. "Paulsen hybrid No. 737."

42496. "Paulsen hybrid No. 764."

42497. "Paulsen hybrid No. 779."

42498. "Paulsen hybrid No. 882."

42499. "Grimaldi hybrid No. 791. *Calabrian* × *Riparia Rupestris* 3309 (published in 1901). The marvelous vigor, superior to that of all the other hybrids, decided me to publish it. It resists drought and has the best of all the other requisites, affinity with our variety, propagation by cuttings, precocity of development, etc. Endures up to 55 per cent of lime in dry soils." (*La Viticoltura Moderna, vol. 10, p. 275, 1904.* For fuller description and plate, see the same periodical, *vol. 12, pp. 169–171, January, 1906.*)

42500. "Paulsen hybrid No. 810."

42501. "Paulsen hybrid No. 877."

42502. "Grimaldi hybrid No. 934. *Calabrian* × *Aramon Rupestris Ganzin.* Of medium vigor, abundantly fruitful. Seeds with skin dark reddish; without foxiness (foxé), medium maturity." (*La Viticoltura Moderna, vol. 12, p. 334, 1906.*)

42503. "Grimaldi hybrid No. 935. *Calabrian* × *Aramon Rupestris Ganzin.* Most vigorous, fruiting very abundantly. Seeds with skin dark reddish; without foxiness (foxé), early maturity." (*La Viticoltura Moderna, vol. 12, p. 334, 1906.*)

42504. "Grimaldi hybrid No. 940. *Calabrian* × *Aramon Rupestris Ganzin.* White grapes; of medium vigor and very fruitful, bunches very large, somewhat few seeded, the seeds large, oval; grapes very sweet, maturity a little late." (*La Viticoltura Moderna, vol. 10, p. 277, 1904.*)

42505. "Grimaldi hybrid No. 953. *Calabrian* × *Aramon Rupestris Ganzin.* White grapes; very vigorous and most fruitful, bunches large and seeds large; grapes very sweet, maturing medium." (For full description and illustration, see *La Viticoltura Moderna, vol. 17, pp. 137–154, 1910.*)

42506. "Paulsen hybrid No. 1045."

42507. "Paulsen hybrid No. 1043."

42508. "Grimaldi hybrid No. 1075. *Frappato* × *Aramon Rupestris Ganzin.* Red grapes; of medium vigor and fruitfulness, bunches medium, with large compact seeds; grapes sweet, maturing early." (*La Viticoltura Moderna, vol. 10, p. 277, 1904.*)

42509. "Paulsen hybrid No. 1103."

42510. "Grimaldi hybrid No. 1132. *Uva di Troya* × *Rupestris Ganzin.* Red grapes. Very vigorous and fruitful, bunches medium, moderately compact, with rather large seeds; grapes sweet and almost free from foxiness; maturity medium." (*La Viticoltura Moderna, vol. 10, p. 277, 1904.*)

42477 to 42519—Continued.

42511. "Paulsen hybrid No. 1176."

42512. "Paulsen hybrid No. 1901."

42513. "Paulsen hybrid No. 1511."

42514. "Paulsen hybrid No. 1321."

42515. "Paulsen hybrid No. 1742."

42516. "Paulsen hybrid No. 1776."

42517. "Paulsen hybrid No. 1548."

42518. "Paulsen hybrid No. 1902."

42519. "Paulsen hybrid" (number not legible).

42520 to 42523.

From Azua, Santo Domingo. Received through Dr. J. N. Rose, U. S. National Museum, April 13, 1916. Quoted notes by Dr. Rose.

42520. COCCOTHRINAX ARGENTEA (Lodd.) Sarg. Phœnicaceæ. **Palm.** (*Thrinax argentea* Lodd.)

"A common species of Santo Domingo. It has purple fruit."

For previous introduction, see S. P. I. No. 40524.

42521. GUILANDINA BONDUC L. Cæsalpiniaceæ. (*Caesalpinia bonducella* Fleming.)

"A low shrub."

For previous introduction, see S. P. I. No. 38891.

42522. INODES NEGLECTA (Beccari) O. F. Cook. Phœnicaceæ. (*Sabal neglecta* Beccari.)

"A tree about 20 feet high, with large, fanlike leaves and large more or less drooping flower clusters. It doubtless would prove a valuable palm for introduction into the warmer parts of this country."

"This palm was first described by Beccari in Webbia, vol. 2, p. 40, 1907, as *Sabal neglecta*. It is closely related to the hat palm of Porto Rico, *Inodes causiarum*, and is therefore placed in that genus." (*O. F. Cook.*)

42523. PICRODENDRON MEDIUM Small. Simaroubaceæ.

"This plant is common about Azua, Santo Domingo. It is a tree with round, orange-colored fruit."

42524. DIOSCOREA DAEMONA Roxb. Dioscoreaceæ. Yam.

From Singapore, Straits Settlements. Tubers presented by Mr. I. Henry Burkill, Botanical Gardens. Received April 14, 1916.

"A large climber of the tropical forests of India and Burma. Stems twining to the left, sometimes prickly; leaves digitately three to five nerved; capsule longer than broad and seeds winged at the base only. This wild yam is extensively used as a famine food, chiefly in Burma and the Central Provinces and Central India. It appears never to have been cultivated. Some writers, however, say the roots are highly poisonous and cause intoxication, but are rendered edible by boiling and steeping in running water, this treatment being repeated two or three times. Ridley speaks of the tubers being used in the manufacture of dart poison." (*Watt, The Commercial Products of India, p. 494.*)

42525 to 42527. CHRYSOPHYLLUM CAINITO L. Sapotaceæ. **Caimito.**

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Agricultural Experiment Station. Received April 15, 1916.

Star-apple. A fairly large, handsome West Indian tree, with striking dark-green leaves, which are copper colored underneath. Fruits are 2½ to 3 inches in diameter, purplish black, round and smooth. A cross section of the fruit presents a stellate form, the cells with their white, edible contents radiating from a central axis; hence the name *star-apple.* The tree is valuable for ornamental and shade purposes; is propagated by seed and thrives best in deep, rich, well-drained soil. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 135.*)

For previous introduction, see S. P. I. No. 40347.

42525. No. 525.2.
42526. No. 890.2.
42527. No. 890.3.

42528. PHYSALIS GRANDIFLORA Hook. Solanaceæ. **Ground cherry.**

From Prince Albert, Saskatchewan, Canada. Purchased from Mrs. Andrew Knox. Received April 14, 1916.

A Physalis found on the sandy banks of the Saskatchewan River, Winnipeg Lakes, and the Red River of the North. It is remarkable for the great size and white color of its flowers, which are nearly an inch broad. The whole plant is exceedingly viscid. (Adapted from *Hooker, Flora Boreali Americana, vol. 2, p. 90.*)

42529. NEYRAUDIA MADAGASCARIENSIS (Kunth) Hook. f. Poaceæ. **Grass.**

From Sibpur, near Calcutta, India. Presented by Maj. A. T. Gage, superintendent, Royal Botanic Garden. Received April 17, 1916.

A grass found in Madagascar that is used, along with other grasses, in the manufacture of ordinary hats. Called *fantaka* in the Hova dialect, though *kitsangy* is the general name used to designate this grass. (Adapted from *Heckel, Les Plantes Utiles de Madagascar, p. 55.*)

For previous introduction, see S. P. I. No. 39690.

42530 and 42531. CICER ARIETINUM L. Fabaceæ. **Chick-pea.**

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, Gizeh Branch, Ministry of Agriculture. Received April 20, 1916.

See S. P. I. No. 42454 for previous introduction and description.

42530. "*Afrangi* (imported)."

42531. "*Shami* (imported) and *Egyptian.*" This seed was mixed when received.

42532. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Algiers, Algeria. Presented by Dr. L. Trabut. Received April 18, 1916.

"We have but a single variety of chayote." (*Trabut.*)

See S. P. I. No. 30462 for previous introduction.

42533 to 42550.

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Quoted notes by Señor Carrasco except as otherwise stated.

42533. Citharexylum barbinerve Cham. Verbenaceæ.

"*Espino de los bañados.* Magnificent ornamental tree, with fragrant flowers, red fruits, and flexible vibrant wood, used in the manufacture of guitars; from the cool and subtropical regions of Argentina."

For previous introduction, see S. P. I. No. 33943.

42534. Butia capitata pulposa (Barb.-Rodr.) Becc. Phœnicaceæ. (*Cocos pulposa* Barb.-Rord.) **Palm.**

"A hardy palm from southern Brazil, belonging to the same group as the species commonly cultivated in California as *Cocos australis, C. yatay,* and *C. eriospatha.* The trunk is 6 to 12 feet by 1½ to 2 feet in diameter, with rather short, abruptly arched leaves 6 to 9 feet long. The petioles are armed with stout spines. The fruit is yellow, about 1 inch long by 1¼ inches in diameter, and the pulp is of a texture and taste somewhat like the pineapple." (*C. B. Doyle.*)

42535. Enterolobium timbouva Mart. Mimosaceæ. **Timbo.**

"*Timbo.* A tree with thick bark, reaching 30 meters in height, branching horizontally, fruits of the size and shape of a human ear, whence called also *Oreja de negro.* Of rapid growth. wood good, native of the northern part of Argentina. From the temperate region."

For previous introduction, see S. P. I. No. 33955.

42536. Eugenia pungens Berg. Myrtaceæ. **Guabiyú.**

"*Guabiyú.* An ornamental fruit tree from the temperate and hot regions of Argentina."

For previous introduction, see S. P. I. No. 33959.

42537. Ficus subtriplinervia Mart. Moraceæ. **Gomero.**

"*Gomero.* A large tree from the subtropics of Argentina."

For previous introduction, see S. P. I. No. 33963.

42538. Lantana sellowiana Link and Otto. Verbenaceæ. **Trailing lantana.**

"*Salvia morada.* A dry, bunchy shrub, flower bearing; from the cool and temperate regions of Argentina."

42539. Leucaena glauca (L.) Benth. Mimosaceæ.

An ornamental tree resembling Mimosa in having 10 stamens and resembling Acacia in its flat pod; much cultivated in warmer climates. The white flowers are numerous, borne in globular heads.

42540. Lithraea molleoides (Vell.) Engl. Anacardiaceæ. (*L. aroeirinha* L. Marchand.) **Aroeira brancha.**

"*Molle a beber.* A strong shrub with handsome foliage; the fruits are used for making a tonic drink. From the temperate and cool regions of Argentina."

For previous introduction, see S. P. I. No. 33981.

42533 to 42550—Continued.

42541. MIMOSA SENSITIVA L. Mimosaceæ. **Sensitive plant.**

"*Sensitiva.* A vigorous flowering shrub from the Tropics of Argentina."

Received as *Mimosa sensitiva arborea*, implying a treelike habit.

42542. PHYTOLACCA DIOICA L. Phytolaccaceæ. **Ombú.**

"*Ombú.* A large branching tree, the trunk of which reaches in a few years a diameter of several meters. Specimens exist in the Province of Buenos Aires which are 5 to 6 meters in diameter, with heads 15 to 20 meters in diameter. From the temperate and subtropical regions of Argentina."

For previous introduction, see S. P. I. No. 31482.

42543. PIPTADENIA COMMUNIS Benth. Mimosaceæ. **Cebil.**

"*Cebil.* A tree attaining 20 meters in height, the trunk being sometimes a meter in diameter, with rough bark and hard wood. Furnishes tannin. From the temperate regions of Argentina."

42544 and 42545. PSIDIUM GUAJAVA L. Myrtaceæ. **Guava.**

42544. "*Guava.* Ornamental shrub with beautiful flowers and useful fruits; from the temperate and warmer regions of Argentina."

Received as *Psidium pomiferum.*

42545. "*Arazá.* Ornamental shrub with beautiful flowers and useful fruits; from the temperate and warmer regions of Argentina."

Received as *Psidium pyriferum.*

42546. PTEROGYNE NITENS Tulasne. Cæsalpiniaceæ.

"*Viraró.* A large tree, with strong useful wood; from the temperate regions of Argentina."

For previous introduction, see S. P. I. No. 41308.

42547. TECOMA STANS (L.) Juss. Bignoniaceæ. **Yellow tecoma.**

"*Guaranguay.* A very floriferous ornamental shrub; from the temperate regions of Argentina."

42548. TERMINALIA TRIFOLIATA Spreng. Combretaceæ.

"*Palo de lanza.* A vigorous tree, with strong flexible yellowish wood; from the temperate regions of Argentina."

For previous introduction, see S. P. I. No. 34029.

42549. TIPUANA TIPU (Benth.) Lillo. Fabaceæ. **Tipu.**
(*T. speciosa* Benth.)

"*Tipu.* A large tree 50 meters in height, leafy, very ornamental, with good timber; from the subtropical, temperate, and cool regions of Argentina."

For previous introduction, see S. P. I. No. 42331.

42550. QUILLAJA SAPONARIA Molina. Rosaceæ. **Quillay.**

"*Quillay.* A leafy tree, of industrial value because of its saponiferous bark; from the cool and temperate regions of Argentina."

For previous introduction, see S. P. I. No. 34407.

42551. Saccharum biflorum Forsk. Poaceæ. **Grass.**

From Algiers, Algeria. Cuttings presented by Dr. L. Trabut. Received April 18, 1916.

"This grass of great size succeeds very well in the sand hills of the coast. It is easily propagated by cuttings, and forms a good screen at very little cost. The results obtained during some years induce me to recommend to you this plant, which grows spontaneously upon the banks of the Nile and in Algeria at Bone. It is much used in Sicily to bind sands and to protect cultivation." (*Trabut.*)

42552. × Cytisus dallimorei Rolfe. Fabaceæ. **Broom.**

From Kew, England. Cuttings presented by Sir David Prain, director, Royal Botanic Gardens. Received April 24, 1916.

"A hybrid raised at Kew in 1900 by crossing *Cystisus scoparius* var. *andreanus* (seed bearer) with *C. albus.* It is a tall shrub, perhaps 8 or 9 feet high, of thin, erect habit, suggesting that of *C. scoparius.* Leaves mostly trifoliolate, downy. Flowers about five-eighths of an inch long, the whole of the petals suffused with beautiful shades of rosy pink, deepening on the wing petals to crimson. Calyx helmet shaped, shining brown, slightly downy. At each node the flowers are solitary or in pairs. The beautiful broom is quite distinct from any other in cultivation and is the first hybrid broom raised by artificial cross-fertilization, all its predecessors having originated as chance crosses made by insects. It is propagated by grafting on Laburnum. As it flowers regularly and in great profusion in May, it ought in time to become a popular garden shrub." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 458.*)

42553 to 42565. Diospyros kaki L. f. Diospyraceæ. **Kaki.**

From Okitsu, Japan. Cuttings presented by Prof. Ishiwara, director, Government Horticultural Experiment Station. Received April 20, 1916. Quoted notes by Mr. T. Kiyono, Semmes, Ala.

42553. "No. 37. *Hagakushi.* Astringent. Fukuoka Province."

42554. "No. 38. *Otani.* Astringent. Fukuoka Province."

42555. "No. 61. *Kabuto-gosho.* Sweet. Gifu Province."

42556. "No. 62. *Kiara.* Sweet. Kumamoto Province."

42557. "No. 63. *Saburoza.* Astringent. Ishikawa Province."

42558. "No. 64. *Kuramitsu.* Astringent. Ishikawa Province."

42559. "No. 65. *Oku-gosho.* Sweet. Gifu Province."

42560. "No. 66. *Kuro-gaki* (or *Birodo-gaki*). Sweet. Gifu Province."

42561. "No. 67. *Midzushima.* Sweet. Ishikawa Province."

42562. "No. 68. *Midzushima.* Sweet. Tomiyama Province."

42563. "No. 69. *Kuramitsu.* Astringent. Fukui Province."

42564. "No. 70. *Saburoza.* Astringent. Fukui Province."

42565. "No. 71. Wild seedling with profuse staminate flower habit, grown in woods near Okudzu station."

42566. RUBUS GEOIDES J. E. Smith. Rosaceæ. Frutilla.

From Punta Arenas, Chile. Presented by Mr. David J. D. Myers, American consul. Received April 18, 1916.

"This fruit is full of seed. I have been unable to learn whether there are any other wild varieties of this *frutilla*, the local name. The plant grows extensively over a large area inland from this port, where fire destroyed the forests some years ago. Neither the plant nor the fruit bears much, if any, relation to the common strawberry from the standpoint of an ordinary observer. The plant is extremely small and the berries are almost completely hidden in the moss and dead leaves. The color of the ripe fruit is amber and resembles the raspberry both in shape and taste. The educated Chileans from the north call the small cultivated strawberries *frutillas* and the large varieties *fresas*. The names seem to be reversed here, and while they call the wild variety *frutilla* also, they do not recognize it as belonging to the same family as the true strawberry." (*Myers.*)

42567. CACARA EROSA (L.) Kuntze. Fabaceæ. Yam-bean.
(*Pachyrhizus angulatus* Rich.)

From Shonghong, via Swatow, China. Presented by Rev. F. J. Wiens, Mennonite Brethren Mission. Received April 15, 1916.

"The root is edible and has a sweet delicious taste. The seeds are planted or sown in April or May, and the flowers are all cut down except those wanted for seeds. The natives tell me the seeds are very poisonous." (*Wiens.*)

42568 to 42571. TRITICUM spp. Poaceæ. Wheat.

From Madrid, Spain. Presented by Mr. José Hurtado de Mendoza, Estación de Ensayo de Semillas, La Moncloa. Received April 21, 1916.

"The most noteworthy varieties cultivated in the Peninsula."

42568. TRITICUM AESTIVUM L.
(*T. vulgare* Vill.)

42569 to 42571. TRITICUM DURUM Desf.

42572 to 42575.

From Teneriffe, Canary Islands. Presented by Dr. George Perez. Received April 17, 1916. Descriptive notes by Dr. Perez.

42572. CYTISUS STENOPETALUS (Webb) Christ. Fabaceæ. Broom.

"*Gacia* is the name under which it is known in our island of Palma, which is the home of this valuable Cytisus and where it is cultivated as a forage plant. This variety has the largest leaves, and on this account is the most suitable of the many varieties of this species as a forage plant. It is a most beautiful and ornamental garden plant, and is cultivated in our island of Palma exactly the same as *tagasaste*, but they find they can plant it higher above the sea level. *Gacia* is known to prosper as high as 1,500 meters above sea level, and therefore will stand cold better. My advice, however, is to make trials only in southern California."

For previous introduction, see S. P. I. No. 29641.

42573. CYTISUS PALLIDUS Poir. Fabaceæ. Broom.

"*Gacia blanca*, also *Herdanera*, as it is known in Palma. Besides being very useful as a forage plant, this is a most beautiful and ornamental garden plant."

For previous introduction, see S. P. I. No. 34262.

42572 to 42575—Continued.

42574. CYTISUS STENOPETALUS (Webb) Christ. Fabaceæ. **Broom.**

For previous introduction, see S. P. I. No. 42572.

42575. LIMONIUM FRUTICANS (Webb) Kuntze. Plumbaginaceæ. (*Statice fruticans* Webb.) **Sea lavender.**

"Native of the coast region of Teneriffe, where the lowest temperature in winter is much above the freezing point, so that it should not be sown in the open where there are frosts. The seed should be carefully extracted before sowing, or if you find this method too slow (it is far the best), then soak in water at about 70° F. and stir daily until the dried flower heads sink to the bottom, then sow. This process takes about 10 days and the seed begins to come up in about one month; in the extracted-seed method germination takes place after about a week."

42576. PRUNUS TOMENTOSA ENDOTRICHA Koehne. Amygdalaceæ. **Bush cherry.**

From Ventimiglia, Italy. Presented by the superintendent, La Mortola Botanic Garden. Received April 20, 1916.

The species is described as follows: "A deciduous shrub of spreading habit, 4 to 8 feet high and twice as wide; leaves dark dull green above, paler and densely woolly beneath. Flowers three-fourths of an inch across, white, tinted with rose, produced singly or in pairs at the joints of the previous year's growth. Fruit bright red, about the size of a small cherry, ripe in July. Native of northern and western China, but introduced from Japan about 40 years ago. It usually flowers about the fourth week in March and is then an object of great beauty and charm. Shoots from 1 to 2 feet long are made in one season, and these the following spring are furnished from end to end with the delicately tinted flowers. It must be said, however, that its beauty is short lived. Some sheltered nook should be chosen for it, a consideration its early blossoms entitle it to. The fruits are not freely produced with us, although about Peking the shrub is cultivated for their sake. Propagated by layers and cuttings of half-ripened wood." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 255.*)

The variety is described by Koehne in Sargent's Plantae Wilsonianae, vol. 1, p. 225, as a shrub 1 to 3 meters or a tree up to 7 meters high, from western Hupeh and northern Shensi.

42577 to 42580. DOLICHOS LABLAB L. Fabaceæ. **Bonavist bean.**

From Georgetown, British Guiana. Presented by Mr. J. F. Waby. Received April 24, 1916. Quoted notes by Mr. Waby.

42577. "*Park's runner* or *scarlet runner.* A viny plant, flowers purplish, pods 6 to 6½ inches long, three-fourths of an inch wide. Beans of the two shades found in the same pod, though more frequently of the darker shade, which is more prolific. I have used it at least twice a week on my table for months; it is decidedly the best we have. See mention in Board of Agriculture Journal of British Guiana, vol. 8, p. 14, 1914."

42578. "Strong vine, prolific, lasting at least two years and giving abundantly if well watered. Purplish flowers, seeds brown, used shelled before the seeds get hard."

42577 to 42580—Continued.

42579. "Dwarf, bushy, 2 to 2½ feet high. white flowers, white seeds, pods small, flat, averaging three seeds each. Grown by the coolies here. This is not to be compared for usefulness with the white-seeded *Nankinicus*."

42580. "A white-flowered kind much used by the coolies."

42581 to 42595.

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received April 20, 1916.

42581. PRUNUS CORNUTA (Wall.) Steud. Amygdalaceæ. **Himalayan bird cherry.**

"A deciduous tree, 50 to 60 feet high in a wild state. Leaves deep dull green above, paler beneath; flowers white, densely set on cylindrical racemes, 3 to 6 inches long, three-fourths to 1 inch wide; each flower is one-fourth to one-third inch across. Fruit round, one-third of an inch in diameter, red, changing to dark brown-purple. Flowers in May. Native of the Himalayas, where it is widely spread up to 10,000 feet and represents in that region *Prunus padus*. So nearly are they allied that many botanists regard them as forms of one species. According to travelers in the Himalayas, *P. cornuta* grows to considerably larger size than does *P. padus*, as we know it in England. The name *cornuta* (horned) refers to the shape of the fruits as often seen in the Himalayas. An insect deposits its eggs in the young fruit, and as the larvæ develop they set up irritation and cause a curious growth, which is from 1 to 2 inches long and curled like a horn. It is analogous to the many galls that occur on our own trees, notably oaks." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 233.*)

42582. × PRUNUS EMINENS Beck. Amygdalaceæ. **Hybrid cherry.**

"A small pretty tree similar to *Prunus acida* in flower, but of more open growth; is described as a hybrid between it and *P. fruticosa*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 227.*)

42583. PRUNUS INCANA (Pall.) Stev. Amygdalaceæ. **Willow cherry.**

"A deciduous shrub, 4 to 8 feet high, of rather open, loose habit. Leaves dark green and smooth above, covered with a close white wool beneath. Flowers one-fourth of an inch across, borne singly from the buds of the previous year's shoots; petals deep rosy red. Fruit smooth, red, one-third of an inch across. Native of southeastern Europe and Asia Minor; introduced in 1815. Its flowers appear in April along with the young leaves, and it is then very pretty. Sometimes confused with *Prunus nana*, it is easily distinguished from that and most other species by the close white felt on the under surface of the willowlike leaves. The fruit is quite different from that of *P. nana*, being cherrylike." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 238.*)

42584. PRUNUS MAXIMOWICZII Rupr. Amygdalaceæ. **Korean cherry.**

"A deciduous tree up to 20 or 30 feet high, with a slender trunk. Flowers rather dull yellowish white, about five-eighths of an inch across, produced in mid-May on stalked racemes, remarkable for the large leaflike bracts with which they are furnished. Fruit globose, one-sixth of an inch wide, shining, at first red, then black; ripe in August. Native

42581 to 42595—Continued.

of Korea, Manchuria, and Japan. The tree is interesting and very distinct among cherries because of the conspicuous bracts on the inflorescence, which remain until the fruit is ripe; but neither in flower nor fruit is it particularly attractive as cherries go. For its autumn coloring it may prove valuable, as it turns a brilliant scarlet both in Japan and North America. It is very hardy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 243.*)

For previous introduction, see S. P. I. No. 40997.

42585. Rubus coreanus Miquel. Rosaceæ. Bramble.

"A deciduous shrub, 8 to 10 feet high (it has been found 15 feet high in a wild state), with erect or arching, stout, biennial stems, branching toward the top, and armed with stiff, broad-based spines. Leaves composed usually of seven dark lustrous-green leaflets. Flowers borne in flattish clusters, terminating short shoots from the wood of the previous year. Fruit of various colors from red to nearly black, edible but small, and of poor flavor. Native of Korea and China; introduced from the latter country in 1907 by Wilson, who found it at altitudes up to 6,000 feet. It is one of the handsomest of all Rubi in its vigorous blue-white stems and beautiful pinnate foliage, and may prove a valuable acquisition in gardens should it be quite hardy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 456.*)

For previous introduction, see S. P. I. No. 26277.

42586. Rubus biflorus quinqueflorus Focke. Rosaceæ. Bramble.

"A deciduous shrub, with erect stems up to 10 feet high and 1 inch thick at base, covered with a thick, white, waxy coating and armed with straight, broad-based spines. Toward the top the stems branch freely, the branches also being white, and, like the leafstalks and often the midrib, spiny. Leaves 4 to 10 inches long, composed of three to five leaflets, which are dark green above, covered beneath with a close white felt. Flowers terminal and axillary, white, three-fourths of an inch across; fruits edible. Native of the Himalayas up to 10,000 feet; introduced in 1818. Among the longer cultivated, white-stemmed raspberries this is by far the most effective, although it is no doubt equaled by some of the newer Chinese species. Its flowers are of little consequence, being small and of little beauty. It should be raised from seed (which ripens here), and planted in groups of not less than half a dozen. The soil should be a good loam, the aim being to produce stout thick stems, for the stouter they are the whiter and more persistent is their waxy covering. After the previous year's stems have flowered and borne fruit, they should be cut away (usually about August), leaving only the virgin growths of the year. During autumn and winter a group of this Rubus makes one of the most striking plant pictures in the open air. Var. *quinqueflorus.*—A vigorous Chinese form introduced by Wilson in 1907, with the terminal inflorescence composed most frequently of five (sometimes up to eight) flowers. In the type they are usually two or three." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 454.*)

For previous introduction, see S. P. I. No. 35197.

42587. Rubus lasiostylus dizygos Focke. Rosaceæ. Bramble.

"An erect-growing deciduous shrub with biennial stems 4 to 6 feet high, covered with a blue-white, waxy bloom, and closely set with bristle-

42581 to 42595—Continued.

like spines. Leaves composed of three or five leaflets, and on young vigorous plants as much as 14 inches long, but usually some 6 or 8 inches long. Flowers small, with reddish purple petals, which are shorter than the calyx segments and soon fall. Fruit 1 inch across, roundish, red, and downy, with an agreeable acid taste. Native of central China; originally discovered in Hupeh by Henry, who sent seeds to Kew in 1889, from which plants were raised that flowered in 1894. This is one of the most striking of the white-stemmed brambles. It has lately been reintroduced in quantity by Wilson from Hupeh." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 462.*)

42588. Rubus inopertus Focke. Rosaceæ. **Bramble.**

A Chinese bramble, growing at altitudes of 600 to 2,200 meters, of which Focke says (*Sargent, Plantae Wilsonianae, vol. 1, p. 54*): "This Chinese plant seems to be rather constant and looks very different from the tropical *R. niveus* Thunberg. It is therefore reasonable to separate the two plants specifically, although there occur connecting links in the Himalayas."

For previous introduction, see S. P. I. No. 26276.

42589. Rubus mesogaeus Focke. Rosaceæ. **Bramble.**

A slender climbing bramble with stems 4 to 5 meters long, rather small flowers, and small globose berries. Native of central China, especially western Hupeh and Szechwan. (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica, No. 72, p. 204.*)

42590. Rubus omeiensis Rolfe. Rosaceæ. **Bramble.**

A large straggling shrub with round stems unarmed, but furnished with small stellate hairs. Leaves of maplelike form, five or obscurely seven lobed, with a heart-shaped base; 3 to 7 inches long and as wide. Stipules one-half to three-fourths of an inch long, cut up into deep narrow segments. Panicles many flowered, terminal; flowers half an inch across with downy stalks; calyx downy, the lobes pointed, triangular; petals purple. Fruit black, well flavored, ripening late. Native of western China, and found on Mount Omi by Wilson, who introduced it for Messrs. Veitch, with whom it flowered in August, 1908. It grows up to 6,000 feet elevation and will probably be perfectly hardy. It makes a growth 10 or 12 feet long in a season. The stipules are rather remarkable. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 465.*)

For previous introduction, see S. P. I. No. 40195.

42591. Rubus pubescens Weihe. Rosaceæ. **Bramble.**

A very robust bramble, native of central and western Germany, Switzerland, France, and England, with strong, thick canes which do not ascend to any height without support. Spines very strong, reddish brown, on broad compressed bases. Flowers appearing in July, conspicuous, white, sometimes pale red. Fruit well developed, conspicuous, round, with pleasant flavor.

42592. Rubus thibetanus Franch. Rosaceæ. **Bramble.**

An erect deciduous shrub, 6 feet or more high; stems biennial, smooth, round, covered with a purplish bloom and set irregularly with straight,

42581 to 42595—Continued.

slender prickles. Leaves pinnate, 4 to 9 inches long, composed of 7 to 13 leaflets. Flowers one-half inch across, petals purple. Fruit roundish, five-eighths of an inch across, black with a bluish bloom. Native of western China; discovered and introduced by Wilson for Messrs. Veitch, with whom it flowered in August, 1908. Wilson found it in the Min River valley at altitudes of 4,000 to 6,000 feet, where it is rare. Of the newer Chinese Rubi it is one of the most distinct and attractive looking, for both its blue-purple stems and its very handsomely cut foliage. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 468.*)

42593. RUBUS THUNBERGII GLABELLUS Focke. Rosaceæ. **Bramble.**

A Chinese Rubus from western Hupeh differing from the typical Japanese plant in its more robust habit and its sparingly pilose leaves and twigs.

42594. RUBUS TRIANTHUS Focke. Rosaceæ. **Bramble.**

A deciduous shrub of wide-spreading habit, the biennial stems erect, much branched, spiny, blue-white, 4 to 6 feet high. Leaves simple, distinctly three lobed on the barren stems, less markedly lobed on the flowering shoots, whitish beneath, dark green above. Flowers pinkish white, insignificant, produced a few together on cymes that are terminal on short lateral twigs. Fruit dark red. Native of central China up to 4,000 feet; introduced for Messrs. Veitch by Wilson in 1900. It is distinct from most Rubi in the absence of down or hairs, but has not much garden value. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 469.*)

42595. RUBUS VICARIUS Focke. Rosaceæ. **Bramble.**

A form from western Szechwan, closely related to *Rubus idaeus.* (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica, No. 72, p. 204.*)

42596. STRYCHNOS SPINOSA Lam. Loganiaceæ. **Kaffir orange.**

From Inhambane, Portuguese East Africa. Presented by Rev. Pliny W. Keys, Methodist Episcopal Mission. Received April 24, 1916.

"A remarkable East African shrub or small tree with evergreen foliage and short spines, bearing large, round, green fruits with extremely hard shells. When these ripen they turn yellow and scent the room with the fragrance of cloves. The seeds have a small amount of strychnin in them. The flesh is edible, reminding one of a brandied peach." (*Fairchild.*)

For previous introduction, see S. P. I. 33341.

42597 to 42605.

From Ventimiglia, Italy. Received through the superintendent, La Mortola Botanic Garden, April 17, 1916.

42597. CORNUS CAPITATA Wall. Cornaceæ. **Bentham's cornel.**

A deciduous or partially evergreen tree, 30 to 40 or more feet high, of bushy habit, and, if allowed to develop without interference by other trees, wider than it is high. Leaves leathery, opposite, dull gray-

42597 to 42605—Continued.

green. Flowers minute, inconspicuous, crowded in a hemispherical mass half an inch across. The beauty of the inflorescence is in the four to six sulphur-yellow bracts that subtend the true flowers; these are obovate, 1½ to 2 inches long, and three-fourths to 1½ inches wide. The fruit is a fleshy, strawberry-shaped, agglomerated, crimson mass, 1 to 1½ inches across, in which many seeds are imbedded. Introduced from the Himalayas in 1825 and is a native also of China. When covered with the pale yellow "flowers," they provide one of the richest ornaments, and in fruit, too, they are objects of great beauty, but often damaged by birds. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 387.*)

For previous introduction, see S. P. I. No. 42287.

42598. CYPHOMANDRA BETACEA (Cav.) Sendt. Solanaceæ. **Tree-tomato.**

A treelike half-woody plant, 6 to 10 feet high, with large entire cordate-ovate leaves and small pinkish fragrant flowers followed by egg-shaped, reddish brown, finely striped fruits about 2 inches long. These are seedy, musky acid, and somewhat tomatolike in flavor. Grown mostly as a curiosity. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 943.*)

42599. CYPHOMANDRA FRAGRANS (Hook.) Sendt. Solanaceæ. **Tree-tomato.**

This plant is a native of Argentina. The stem is erect, treelike, 12 or more feet high, bearing at the top many long branches, spreading horizontally. The whole plant is glabrous. The leaves are in unequal pairs, the lesser one in the shorter petiole, cordate, glossy, and somewhat succulent; the larger one on a longer petiole, rather ovate than cordate, dark green, a little pale beneath. From the forking of the branches the peduncles have their origin; these are pendent, bearing a raceme of flowers. The mouths of the flowers are all directed downward. Buds at first purple, then greenish, and when fully open are green with a dark streak on the back of each segment. The corolla is thick and fleshy, deeply cut into five oblong, reflexed segments. (Adapted from *Curtis's Botanical Magazine, pl. 1839.*)

For previous introduction, see S. P. I. No. 35096.

42600. HAKEA CUCULLATA R. Br. Proteaceæ.

An erect shrub 4 to 5 feet high with pale brown, very hairy branches. The large sessile leaves are leathery, heart shaped, and are glaucous green in color. The red flowers appear in copious clusters and are composed of four strap-shaped segments. Fruits clustered, about an inch long. (Adapted from *Curtis's Botanical Magazine, pl. 4528.*)

42601. HAKEA ELLIPTICA (Smith) R. Br. Proteaceæ.

An erect shrub 6 to 15 feet high with nearly sessile oval or elliptical leaves 2 to 3½ inches long, white flowers in globose sessile clusters and ovoid fruit. The foliage is by far the finest of all the introduced kinds, the rich bronze color of the young shoots being hardly rivaled among other shrubs. The compact, erect habit makes it generally suited for lawn and shrubbery planting. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1428.*)

42597 to 42605—Continued.

42602. HAKEA LAURINA R. Br. Proteaceæ.

A tall shrub up to 30 feet in this country and becoming treelike in Australia. Leaves ellipitical or lanceolate, 5 to 6 inches long. Flowers crimson in a globular head 1½ to 2 inches thick, from which the numerous showy golden-yellow styles project 1 inch or so in every direction. It is the only species with showy flowers grown in America. Equally satisfactory for shrubbery and for hedges. Always highly ornamental. It has been called "the glory of the gardens of the Riviera." (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1428.*)

42603. HAKEA SUAVEOLENS R. Br. Proteaceæ.

A rounded shrub from 8 to 15 feet high, leaves 2 to 4 inches long, cylindrical, with rigid spinelike tip, occasionally entire, but usually branched into rigid cylindrical lobes. Flowers white, fragrant. An easily grown, drought-resistant, self-protective plant, and therefore a favorite for depot grounds, public parks, impenetrable hedges, and the like. Makes a suitable covering for dry hillsides, although not deep rooted and sometimes inclined to become top-heavy. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1428.*)

42604. HAKEA VARIA R. Br. Proteaceæ.

A shrub resembling *Hakea suaveolens*, with some leaves with nearly cylindrical lobes, varying, however, to flat and hollylike, 1 to 2 inches long. Flowers in small clusters. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1428.*)

42605. ALECTRYON TOMENTOSUM (F. Muell.) Radlk. Sapindaceæ.
(*Nephelium tomentosum* F. Muell.)

A tree 20 to 30 feet high, from Queensland and New South Wales. Leaflets four to eight, 2 to 4 inches long; flowers small, crowded on short, slightly branched tomentose panicles sometimes reduced to simple racemes. Fruit softly tomentose-villous, depressed at the top, of two or rarely three globular, slightly compressed lobes, united at the top, four or five lines in diameter, rather hard, indehiscent. Seeds half immersed in a yellowish arillus. (Adapted from *Bentham, Flora Australiensis, vol. 1, p. 466.*)

For previous introduction, see S. P. I. No. 35102.

42606. CITRUS LIMONIA Osbeck. Rutaceæ. **Szechwan lemon.**

From Chungking, China. Seeds presented by Mr. E. Widler. Received April 15, 1916.

"This lemon answers almost the description of the Ichang lemon, excepting that its seeds are much smaller, and the inside seems to be all pith. These Szechwan lemons grow about 100 miles distant from Chungking. Chinese name *Hsiang yüan.*" (*Widler.*)

42607. ARALIA CACHEMIRICA Decaisne. Araliaceæ.

From Jamaica Plain, Mass. Presented by Prof. C. S. Sargent, Arnold Arboretum. Received April 28, 1916.

A spineless herb from the Himalayas growing to a height of 8 feet, with quinately compound leaves, the pinnæ often with five to nine leaflets which are usually rounded at the base, oblong-ovate, doubly serrate, and 4 to 8 inches long. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 344.*)

For previous introduction, see S. P. I. No. 33142.

42608. PANICUM LAEVIFOLIUM Hack. Poaceæ. Grass.

From Johannesburg, Union of South Africa. Presented by Mr. J. Burtt Davy, botanist, Agricultural Supply Association. Received April 25, 1916.

"An annual hay grass common in wettish lands in our maize belt. This is a remarkably heavy cropper, and if I remember rightly one of my early investigations gave a cutting of about 5 tons of hay to the acre, but I have not my original notes, which have been lost somewhere in the Department of Agriculture. This grass seems to thrive best on alluvial deposits, but it is also found on almost any kind of soil where water is apt to stand during rains. Animals are extremely fond of it, and we consider it one of our best native grasses. As compared with *teff* (*Eragrostis abyssinica*), the principal drawback of *Panicum laevifolium* is the unevenness in maturity of its seeds, whereas *teff* matures very evenly, owing to the fact that the first-ripened seeds do not fall off easily, as is the case with *P. laevifolium.* However, in spite of this drawback I think this grass may meet the needs of some particular locality in the South where the rainfall is erratic and apt to come after long intervals of drought." (*Davy.*)

42609. INDIGOFERA GLANDULOSA Wendl. Fabaceæ. Indigo.

From Bangalore, Mysore, India. Presented by Mr. G. H. Krumbiegel, superintendent, Government Botanic Gardens, Lal-bagh. Received April 24, 1916.

An ornamental leguminous annual from tropical Asia and Australia, about a foot tall and bearing purple, pea-shaped flowers in July. (Adapted from *Johnson's Gardeners' Dictionary, p. 512.*)

For previous introduction, see S. P. I. No. 42027.

42610. ZEA MAYS L. Poaceæ. Corn.

From Canada. Presented by Prof. James Murray, MacDonald College, Quebec. Received April 24, 1916.

"*Quebec yellow,* which yielded an average of 84 bushels per acre for four years on an acre block at MacDonald College." (*Fairchild.*)

42611. CANNABIS SATIVA L. Moraceæ. Hemp.

From Yokohama, Japan. Procured from the Yokohama Nursery Company, through Mr. Lyster H. Dewey, of the Bureau of Plant Industry. Received May 2, 1916.

"Produced in Kogen Do (Kang Won), a northeastern province back of Seoul, facing the Japan Sea." (*S. Iida.*)

42612 to 42630.

From British India. Presented by Mr. M. Buysman, Lawang, Java. Received April 19, 1916.

42612. ARALIA CISSIFOLIA Griffith. Araliaceæ.

A shrub 10 feet high, or erect small tree; its branches with short strong deflexed prickles are sometimes clustered at the nodes. Leaflets

42612 to 42630—Continued.

lanceolate, acuminate; peduncles solitary, each carrying a many-flowered umbel. Fruit glabrous. (Adapted from *Hooker, Flora of British India, vol. 2, p. 722, 1879.*)

42613. BRASSAIOPSIS SPECIOSA Dec. and Planch. Araliaceæ.

Frequently found from Nepal and Assam to Chittagong. A small tree of almost palmlike character, scarcely branched, and leafy only at the extremity of the branches. The leaves are large, on long petioles, swollen at the base, digitate, consisting of about seven large leaflets which are oblong-lanceolate and glabrous. Racemes 4 to 5 feet long, pendent from the apex of the stem, and bearing at the end of the branches large densely-flowered umbels of a brownish or yellowish green color. One-seeded, subglobose fruits. (Adapted from *Curtis's Botanical Magazine, pl. 4804,* as *Hedera glomerulata;* and *Hooker, Flora of British India, vol. 2, p. 737.*)

42614. BYTTNERIA ASPERA Colebr. Sterculiaceæ.

"A climbing shrub of the central and eastern Himalayas up to 4,000 feet, the Khasia Hills, the tropical forests of Burma, and the Andamans. It forms often a very dense growth, and has large fruit with strong spikes." (*Gamble, A Manual of Indian Timbers, 2d ed., p. 105.*)

42615. CAMPANULA COLORATA Wall. Campanulaceæ. Bellflower.

The deep-colored bellflower from the high altitudes of India and Afghanistan is variable in its growth, sometimes erect, at others trailing. A desirable ornamental for rock gardens. The slender stems are much branched and grow to a length of 2 feet. The leaves are broadly oval or ovate-lanceolate, and sessile or attenuated into a short footstalk. The flowers are bell shaped, deep bright purple, the tube being rather elongated and the lobes rather large, spreading. (Adapted from *Curtis's Botanical Magazine, pl. 4555.*)

42616. DISPORUM CALCARATUM D. Don. Convallariaceæ.

"This species, remarkable for the length of the spurs at the base of the sepals, was collected by Mr. Gomez on the Jentya Hills in Sylhet, a mountainous region on the northeastern frontier of Bengal. The flowers, which appear in May, are apparently of a green color, and vary from two to five in the umbel. The leaves are altogether sessile, not being narrowed at the base as in most of the other species. The inflorescence, as in the rest of the genus, is really terminal, although from the prolongation of the branches beyond it, it has the appearance of being lateral." (*D. Don,* in *Transactions of the Linnean Society of London, vol. 18, p. 516, 1841.*)

42617. GAULTHERIA TRICHOPHYLLA Royle. Ericaceæ.

A low evergreen shrub of densely tufted habit, 3 to 6 inches high, spreading by means of underground shoots; stems wiry and slender, bristly. Leaves narrow, glossy dark green above, pale beneath. Flowers solitary in the leaf axils; corolla pink, one-sixth of an inch long and wide, bell shaped. Fruit blue-black. Native of the Himalayas up to 13,000 feet. It is a dainty plant suitable for the rock garden and pleasing for the bright green of its foliage and neat habit. Propagated by cuttings and division. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 582.*)

42612 to 42630—Continued.

42618. LITSEA ZEYLANICA Nees. Lauraceæ.

A middle-sized evergreen tree, glabrous, only leaf buds and pedicels pubescent. Leaves alternate, thinly coriaceous, pale beneath, 4 to 6 inches long, on a petiole half an inch long. Flowers yellowish white, funnel shaped, in dense sessile clusters. Berry subglobose, one-third of an inch in diameter. (Adapted from *Brandis, Forest Flora of India, p. 382.*)

42619. LONICERA MACRANTHA (Don) Spreng. Caprifoliaceæ.

Honeysuckle.

An ornamental evergreen climbing shrub with shining green leaves, pale beneath, and fragrant white flowers changing to yellow. It much resembles the Japanese honeysuckle (*Lonicera japonica*), but the unopened flowers are pink or reddish, and the fruit is white. (Adapted from *Hooker, Flora of British India, vol. 3, p. 10.*)

42620. LUCULIA GRATISSIMA (Wall.) Sweet. Rubiaceæ.

"Himalayas and Ava, at elevations of 4,000 to 6,000 feet. A tall shrub or small tree. Important in the series of plants destined to maintain garden fragrance well throughout the year, the copious large blossoms being developed in the coolest season. The plant hates frost and dry heat. The flowers will likely be acceptable for perfume factories." (*Mueller, Select Extra-Tropical Plants, p. 292.*)

42621. MICROTROPIS DISCOLOR Wall. Celastraceæ.

A small evergreen or shrub from the forests of the central Himalayas up to 7,000 feet, the Khasia Hills, and the damp hill forests of Burma. The wood is white and easily worked. (Adapted from *Gamble, A Manual of Indian Timbers, 2d ed., p. 175.*)

42622. PANAX PSEUDOGINSENG Wall. Araliaceæ.

"Doubtfully separable from the true ginseng of Japan, *Panax ginseng* C. A. Mey., which differs by having broader, more obovate, less bristly leaves. The Indian examples show every form of rootstock and tuber attributed specially to *P. ginseng* and to *P. quinquefolium* L." (*Hooker, Flora of British India, vol. 2, p. 721.*)

42623. PRINSEPIA UTILIS Royle. Amygdalaceæ.

A deciduous thorny shrub from the Himalayas and the Khasia Hills. The hard, compact wood is red, close and even grained, and is used for fuel and for walking sticks. The fruit is like a sloe (*Prunus spinosa*), and an oil is expressed from the seeds which is used for food and for burning. (Adapted from *Gamble, A Manual of Indian Timbers, 2d ed., p. 316.*)

42624. RIBES GRIFFITHII Hook. f. and Thoms. Grossulariaceæ.

An erect shrub 8 feet high, from the subtropical regions of the eastern Himalayas. Leaves 2 to 3 inches long. Flexuose, pendent, very lax racemes, 3 to 6 inches long; berry one-fourth of an inch long, red. (Adapted from *Hooker, Flora of British India, vol. 2, p. 411.*)

42625. CAUTLEYA LUTEA Royle. Zinziberaceæ.
(*Roscoea elatior* Smith.)

A common plant in the Himalayas at elevations of 5,000 to 8,000 feet from Kashmir to Bhutan and 5,000 to 6,000 feet in the Khasia Moun-

42612 to 42630—Continued.

tains. Stems grow to a height of 18 inches from the rather swollen rooting base and are leafy all the way up. Narrow leaves 5 to 10 inches long, bright green above, paler or suffused or streaked with red-brown beneath. The spike is 4 to 8 inches high, flowers rather remote; bracts green or red-purple; flowers 1½ to 2 inches long. Calyx tubular, red-purple. Corolla golden yellow. (Adapted from *Curtis's Botanical Magazine, pl. 6991.*)

42626. RUBUS LINEATUS Reinw. Rosaceæ. **Bramble.**

A strong suberect herb with softly pubescent branches. Leaflets three to five, subsessile, coriaceous. Flowers in axillary short heads and terminal elongate silvery panicles. Numerous small red drupes. (Adapted from *Hooker, Flora of British India, vol. 2, p. 333.*)

For previous introduction, see S. P. I. No. 30178.

42627. SALVIA CAMPANULATA Wall. Menthaceæ.

An herb with ascending hirsute stem and axillary or terminal racemes of yellow flowers with purple dots. From Gossain Than, India. (Adapted from *Wallich, Plantae Asiaticae Rariores, vol. 1, p. 67, 1830.*)

42628. SARCOCOCCA SALIGNA (Don) Muell. Arg. Buxaceæ.
(*S. pruniformis* Lindl.)

"An evergreen shrub, 2 to 3 feet high; stems erect, smooth. Leaves 3 to 5 inches long, one-half to 1⅛ inches wide; narrow-lanceolate, with a long drawn-out point; base narrowly wedge shaped; smooth, glossy, with a marginal vein on each side extending all round the leaf; stalk one-fourth to three-eighths of an inch long. Flowers greenish white, in short axillary racemes opening in winter and spring. Berries egg shaped, one-third to one-half inch long, purple. Native of the Himalayas and China, the form from the latter being probably the hardier. The Himalayan plant has long been cultivated indoors at Kew, but the Chinese one was introduced by Wilson about 1902 and has so far proved quite hardy and a vigorous grower. From *Sarcococca humilis* and *S. ruscifolia* it is distinguished by the absence of down from the stems, as well as in stature and length of leaf." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 500.*)

42629. STROBILANTHES PECTINATUS (Wall.) T. Anders. Acanthaceæ.

A spreading shrub up to 10 feet high with heads of wide funnel-shaped, purple flowers 1½ to 2¼ inches across. An important undershrub in the Himalayan forests. (Adapted from *Hooker, Flora of British India, vol. 4, p. 446;* and *Gamble, A Manual of Indian Timbers, 2d ed. p. 519.*)

42630. VIBURNUM CYLINDRICUM Buch.-Ham. Caprifoliaceæ.

An evergreen shrub or, in some of its native habitats, a tree 40 to 50 feet high. Flowers white, quite tubular, about one-fifth of an inch long, produced from July to September in usually 7-rayed cymes 3 to 5 inches across. The cymes are rendered pretty by the protruded bunch of lilac-colored stamens. Fruit egg shaped, one-sixth of an inch long, black. Native of the Himalayas and China. Most of the plants now in cultivation are Chinese, and these are probably hardier than the Indian ones. They have at any rate succeeded very well in the Coombe Wood Nursery.

42612 to 42630—Continued.

Two characters make this species very distinct, viz, the tubular corolla with erect, not spreading lobes, and the curious waxy covering of the leaves; the latter only shows itself when the leaf is touched or bent; ordinarily they are of a dingy dark green. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 645.*)

42631. Colocasia esculenta (L.) Schott. Araceæ. **Taro.**

From Hilo, Hawaii. Tubers presented by the Hilo Boarding School, at the request of Mr. J. B. Thompson, Hawaii Experiment Station, Glenwood. Received May 1, 1916.

Lihilihi molina variety.

42632. Ceratonia siliqua L. Cæsalpiniaceæ. **Carob.**

From Athens, Greece. Presented by the Royal Society of Agriculture. Received April 25, 1916.

A small shrubby tree, native of southern Europe and extensively cultivated for its sweet, sugary, flat pods. They are a valuable fattening and nutritious food for cattle and are also relished by human beings. The tree is frequently unisexual. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 174.*)

See S. P. I. No. 30914 for previous introduction.

42633. Vicia faba L. Fabaceæ. **Broad bean.**

From Valparaiso, Chile. Presented by Mr. L. J. Kenna, American consul general. Received May 1, 1916.

"*Habas*, which is the only commercially successful variety of the horse bean known in this market." (*Kenna.*)

42634 to 42640.

From Christiania, Norway. Presented by Mr. Rolf Nordhagen, Botanic Garden. Received April 20, 1916.

42634. Avena planiculmis Schrad. Poaceæ. **Oats.**

"Possesses leaves 1 inch wide; occurs in eastern Siberia in dry, open places." (*A. S. Hitchcock.*)

42635. Berberis sp. Berberidaceæ. **Barberry.**

"I am very sorry to say that after examining both *chinensis* and *spathulata* [S. P. I. No. 42637] I have come to the conclusion that they are not rightly determined." (*Nordhagen.*) Received as *Berberis chinensis* Poir.

42636. Berberis integerrima Bunge. Berberidaceæ. **Barberry.**

Shrub growing to 6 feet tall, last year's branches terete, purplish brown; spines usually simple, about 2 inches long. Leaves obovate or broadly obovate, usually entire, sometimes remotely setose-serrate, grayish green. Racemes dense, usually many flowered. Flowers are small, on short pedicels, about one-fifth of an inch long. Fruits black, globose-ovoid. A somewhat variable species. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 490.*)

42634 to 42640—Continued.

42637. BERBERIS sp. Berberidaceæ. **Barberry.**

"I am very sorry to say that after examining both *chinensis* [S. P. I. No. 42635] and *spathulata* I have come to the conclusion that they are not rightly determined." (*Nordhagen.*) Received as *Berberis spathulata* Schrad.

42638. MALUS PUMILA Mill. Malaceæ. **Paradise apple.**

"*Paradise.* A bushy apple, apparently rarely growing over 5 feet in height. A native of the Caucasus, whence it probably was introduced into western Europe, where it is now extensively used as a dwarfing stock for apples. This shrubby apple produces red fruits of fair quality, is very drought resistant, and stands high summer temperatures. May be used in hybridization work and in creating a strain of bush apples." (*Meyer.* See *S. P. I. No. 27968, Inventory 23, p. 52.*)

Seeds received as *Pyrus paradisica. Malus pumila* is, however, the earlier name.

42639. RUBUS CAESIUS L. Rosaceæ. **Dewberry.**

"A deciduous shrub, with slender creeping stems, prickly, and covered with a whitish bloom when young. Leaves usually composed of three leaflets which are green on both sides. Flowers white, in small clusters. Fruit composed of a few large carpels, covered with a blue-white bloom when ripe. This is one of the British brambles easily distinguished from all the forms of common blackberry by the few but large 'pips' composing the fruit and by their being covered, like the young stems, with a white or bluish bloom. It is common in Britain and over Europe, extending into northern Asia. Of no value for gardens." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 455.*)

For previous introduction, see S. P. I. No. 30161.

42640. VACCINIUM MYRTILLUS L. Vacciniaceæ. **Bilberry.**

A deciduous shrub, usually 6 to 12 inches high, sometimes more. Leaves ovate, often somewhat heart shaped, bright green, and quite smooth. Flowers produced in May usually singly on drooping stalks from the leaf axils. Corolla nearly globular, pale pink, one-fourth of an inch long. Berries black, with a blue bloom, one-third of an inch in diameter, globular. Native of Britain, where it is one of the commonest of mountain and moorland shrubs, also of northern and central Europe. The bilberry is one of the most valuable wild fruits of Britain and is frequently offered in considerable quantities in the markets of north country towns. It is used for making tarts and jelly and is especially delicious eaten with cream and sugar. A very hardy plant, it manages to survive on the summits of our loftiest mountains. It is scarcely of sufficient interest for the garden, and does not always thrive well transplanted to low-level gardens, in the South at any rate. Its angled stems distinguish it from the other British species. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 628.*)

42641. VICIA FABA L. Fabaceæ. **Broad bean.**

From Yokohama, Japan. Presented by Miss Eliza R. Scidmore. Received May 5, 1916.

"Large shipments of horse beans have lately been made to Australia from Japan, and Australian varieties are being experimented with here." (*Scidmore.*)

42642. ZEA MAYS L. Poaceæ. Corn.

From Tucson, Ariz. Presented by Mr. George F. Freeman, acting director, University of Arizona. Received May 5, 1916.

"*Papago* sweet corn. We do not really expect that this will be promising as a sweet corn outside of the Southwest, but some results in eastern Kansas and Nebraska last year indicate that it might prove a valuable silage or forage corn in the humid sections." (*Freeman.*)

42643. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ. (*P. juliflora* DC.) **Algaroba.**

From Kingston, Jamaica. Presented by Mr. W. Harris, superintendent, Public Gardens. Received April 7, 1916.

A shrub or tree, 3 to 40 feet high, with bipinnate leaves of 15 to 20 pairs of leaflets, each composed of one or two pairs of pinnæ; and axillary flowers in cylindrical heads resembling those of *Acacia* spp. Native of Mexico and the West Indies.

42644 to 42646. VICIA FABA L. Fabaceæ. **Broad bean.**

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, Gizeh Branch, Ministry of Agriculture. Received May 5, 1916. Notes by Mr. Brown.

"Varieties usually grown in Egypt."

42644. "*Egyptian tick* bean."

42645. "*White Cyprus* bean."

42646. "*Fava Pavonazza.*"

42647. BUCKLANDIA POPULNEA R. Br. Hamamelidaceæ.

From Darjiling, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. Received May 8, 1916.

"In its young state this is an exceedingly ornamental evergreen shrub. The large orbicular-cordate acuminate leaves at first are purple, with the course of the veins picked out with green; afterwards they are green with purple veins. The stipules are remarkable for concealing between them the terminal bud; they are obliquely obovate-oblong, purplish. Himalaya." (*Kew Bulletin, Additional Series 4, 1900.*)

For previous introduction, see S. P. I. No. 39639.

42648. PLATANUS ORIENTALIS L. Platanaceæ. **Oriental plane tree.**

From Lahore, India. Presented by the superintendent, Agri-Horticultural Society. Received May 4, 1916.

"A deciduous tree of the largest size, in this country occasionally 80 to 100 feet high and 14 to 20 feet in girth of trunk; in open situations it usually branches a few feet from the ground into several large spreading limbs; young shoots at first covered with pale brown hair tufts, becoming smooth later. Leaves palmate, 6 to 10 inches wide, somewhat less in length, with five large lobes and usually a smaller one on each side at the base; the lobes, which are half to two-thirds the depth of the blade and lance shaped, each have one to three large teeth or minor lobes at the sides. When they first unfold, the leaves are covered with a thick whitish brown felt composed of stellate hairs, which later falls away, leaving the leaf smooth except near the veins beneath and glossy above; stalk 1½ to 3 inches long. Fruit balls two to six on each stalk, 1 inch wide, bristly." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 203.*)

42649 to 42673.

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Received April 26, 1916. Plants of the following:

42649 to 42655. Arundinaria spp. Poaceæ. Bamboo.

42649. Arundinaria graminea (Bean) Makino.

A slender and very hardy bamboo, with stems up to 10 feet high and about one-fourth of an inch in diameter. The leaves are the narrowest in proportion to their length of all the hardy bamboos, being 4 to 9 inches long but not more than half an inch wide. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 215.*)

42650. Arundinaria simonii (Carr.) A. and C. Rivière.

A very vigorous bamboo, which spreads rapidly by means of its underground suckers, and, with the exception of *Arundinaria fastuosa*, is the tallest of our hardy sorts. It has stems up to 18 feet high, 1 to 1½ inches in diameter at the base, the outer ones arching outward. The leaves are narrowly oblong, broadly wedge shaped at the base, with long tapering points, 3 to 12 inches long and one-third to 1¼ inches wide, vivid green above, and glaucous on one side of the midrib beneath, rather greenish on the other. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 219.*)

"The sheaths nearest the ground are short, though long enough to overlap the internodes, but those of the upper joints, although 8 to 10 inches long, do not exceed the internodes in length. They are at first of a fine green color, shading into purple, which soon fades, however, to a dull yellow. These prominent sheaths, which are thick, stiff, and beautifully glazed on the side next the culm, will easily distinguish this arundinaria from any other common Japanese form." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 32.*)

42651. Arundinaria japonica Sieb. and Zucc.

A very hardy, handsome evergreen bamboo, having larger leaves than any other species of its height and character that we can grow outside. It maintains a rather tufted habit. The stems are 10 to 12 feet high, erect, one-sixth to two-thirds of an inch in diameter, with erect branches near the top. Leaves 7 to 12 inches long, three-fourths of an inch to 2 inches wide, terminated by a long, taillike point. The upper surface is a dark, glossy green; rather glaucous beneath, except a strip about one-fourth of its width near one margin, which is green. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 216.*)

42649 to 42673—Continued.

"This is said to be the hardiest species in Japan, growing as far north as the island of Hokkaido, where the temperature falls below zero Fahrenheit. Its culms are extensively used for fan making, and millions of cheap paper-covered fans are made every year from the stems of this species. River banks and the margins of ponds and canals are eminently suited to its growth, and the overflowed lands of the Colorado River in Arizona might be planted to advantage with this species." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus-Bul. 43, p. 31.*)

42652. Arundinaria fastuosa (Marl.) Makino.

If not the most graceful, it is the loftiest and stateliest of hardy species, resembling *Arundinaria simonii,* but differing in the short, crowded branches at each joint and in the more tufted habit. The stems are up to 22 feet high and 1½ inches in diameter at the base. The leaves are 4 to 8 inches long, one-half to 1 inch wide, wedge shaped at the base, long and taper pointed; dark, lustrous green above; one side of the midrib beneath glaucous, the other greenish; margins toothed. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 215.*)

42653. Arundinaria pygmaea (Miquel) Kurz.

The dwarfest of the hardy bamboos, although the stems, when drawn up in a dense mass, will grow 18 inches high. Leaves 2 to 5½ inches long, one-third to 1 inch wide, rounded at the base, rather abruptly narrowed at the apex to a slender point. This little bamboo forms a low, dense carpet over the ground and spreads with great rapidity. Among the dwarf creeping sorts with green leaves, the velvety undersurface of the leaves will best distinguish it. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 218.*)

42654. Arundinaria marmorea (Mitf.) Makino.

A very pretty, well-marked bamboo, distinguished by the marbled stem sheaths and stems remaining unbranched the first season and by the apex of the leaf being constricted about half an inch from the tip. It spreads very rapidly by underground suckers, forming luxuriant masses, but is liable to injury by winter cold. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 217.*)

42655. Arundinaria marmorea (Mitf.) Makino.

Var. *variegata.* A form differing from the species only in its variegated leaves.

42656. Sasa albo-marginata (Miquel) Makino and Shibata. Poaceæ. Bamboo.

A hardy bamboo with stems 1 to 1½, sometimes 3 to 4 feet high, with a single branch at each of the upper joints, leaves narrow-oblong, 4 to 8 inches long, 1 to 2¼ inches wide, abruptly tapered at the base and narrowed quickly also at the top to a short, slender point. It forms dense, matted patches and spreads very rapidly While it is pleasing in summer

42649 to 42673—Continued.

and early autumn, the habit of decaying at the leaf margins spoils it later. This character is not found, so far as I know, in any other hardy species. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 220.*)

42657. BAMBOS QUADRANGULARIS Fenzi. Poaceæ. Bamboo.

A bamboo which grows to a height of 30 feet in a wild state, but is usually 6 to 12 feet high in Europe. Stems round when young, but distinctly four sided, with rounded corners, when half an inch or more thick. It is best distinguished in the younger stages by curious little spicate protuberances at the joints. Leaves rich green, 4 to 8 inches long, one-half to 1 inch wide. It is, unfortunately, not very hardy. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 231.*)

"The sheath is very thin and delicate and more open than in most bamboos, gaping from the base and leaving the greater part of the internode uncovered. The wood of this species is too weak to make it of any great value, and its sensitiveness to frost is too great to enable one to class it among the hardy sorts. It is, however, a decorative plant and worthy of repeated trials in the frostless regions of America. It is said that roots will form easily from the lower nodes of the square bamboo if the portion bearing these nodes is buried in the soil. This would facilitate propagation if the statement proves correct." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 34.*)

42658. BAMBOS NANA Roxb. Poaceæ. Bamboo.

A dwarf bamboo with stems 1 to 2½ feet high, most of them about as thick as a lady's hatpin, zigzagged. Leaves arranged in two opposite rows; three-fourths to 2¼ inches long, one-sixth to one-third of an inch wide, rounded at the base, bright green above, slightly glaucous beneath. Its dwarf, erect stems and tiny, distichously arranged leaves easily distinguish it from all other hardy bamboos. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 231.*)

42659. PHYLLOSTACHYS BAMBUSOIDES CASTILLONIS Marliac. Poaceæ. Bamboo.

This has the most beautifully colored stems of all hardy bamboos. The curious alternation of green and yellow, together with the often variegated leaves, make it very distinct. According to Dr. Stapf, of Kew, there is nothing in its floral characters to distinguish it from *Phyllostachys nigra*. In vegetative character, however, it is very near *P. bambusoides*. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 150,* as *P. castillonis.*)

"The contrast between the golden yellow of the stems and the green stripes on the young shoots is one of the prettiest effects imaginable. The species grows occasionally over 30 feet high in Japan." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 29.*)

42660. PHYLLOSTACHYS PUBERULA (Miquel) Munro. Poaceæ. Bamboo.

A very graceful and luxuriant bamboo, reaching in favorable situations 14 feet in height. It is laden, when in good health and well established, with heavy plumose masses of foliage, which make the outer stems arch outward. Leaves are uniform in size and from 2 to 3½ inches long and

42649 to 42673—Continued.

from one-third to five-eighths of an inch wide, tapering at the base to well-developed stalks one-eighth of an inch long; dark lustrous green above, glaucous beneath. In the richness of its verdure combined with a remarkable elegance of form, this bamboo is probably the loveliest of all its kind. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 150.*)

42661. PHYLLOSTACHYS PUBESCENS Houzeau. Poaceæ. Bamboo.

This is one of the stoutest of our hardy bamboos, the stems reaching sometimes nearly 20 feet in height and bending somewhat stiffly; 1½ inches in diameter, deep yellow when mature. Leaves 2 to 5 inches long, one-fourth to three-fourths of an inch wide, tapering or rounded at the base, slender pointed, dark green above, glaucous beneath. The stems when young grow with great rapidity, sometimes nearly 1 foot in 24 hours in England—more in hotter climates. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 151,* as *P. mitis.*)

"The largest hardy species in Japan, growing to a height of over 50 feet and producing, not uncommonly, culms over 6 inches in diameter. The culms are gently curved shortly after leaving the ground, while those of other sorts with which it might be confused rise straight from the base. Its sheaths are of a light-brown color, marked with dark umber-brown blotches and round dots and covered with bristles. The sheath spreads right and left from the base of the pseudophyll and is fringed throughout with hairs which are straight when they lie between the pseudophyll and the stem, but curled on the right and left sides where they are free to develop. The internodes are generally shorter than those of the other large species, and the leaf sheaths are fringed at the insertion of the leaf with a number of rather coarse hairs. The branch buds are purplish brown and strongly marked. This is the great edible bamboo of Japan and China, the method of cultivation of which has been described." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 27.*)

42662. PHYLLOSTACHYS PUBESCENS HETEROCYCLA (Carr.) Houzeau. Poaceæ. Bamboo.

The curious so-called tortoise-shell bamboo. The joints of the stems near the base do not circle them in the ordinary way, but take diagonal directions, the normal space between the joints being suppressed at each side alternately. Thus the scars join at opposite sides alternately for 1 or 2 feet up the stem, when it assumes its normal form and the scars become rings. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 151.*)

42663. PHYLLOSTACHYS PUBERULA NIGRA (Lodd.) Houzeau. Poaceæ. (*P. nigra* Munro.) Bamboo.

One of the handsomest of the bamboos, very distinct because of its black stems, which vary from 10 to 20 feet in height and from half an inch to 1¼ inches in diameter; at first green, they become with age quite black. Leaves in plumose masses, usually 2 to 3½ inches long, one-fourth to five-eighths of an inch wide (sometimes larger); of thin texture, dark green above, rather glaucous beneath. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 152.*)

42649 to 42673—Continued.

"The culms when young are covered with dark brown to purple spots, which spread as it grows older until the whole culm becomes dark brown, almost black, except just below the nodes, where there is an ash-gray line. This dark color at once distinguishes the species from all other Japanese sorts. Branch buds are brown, mottled with black. There is a great variation in the intensity of this dark color of the culms, and this is said to vary with the kind of soil upon which the plants are grown and the amount of sunlight to which they are exposed. . . . Nothing could exceed the delicate beauty of the groves of this species which are to be seen near Kyoto. Their dark stems, ash-gray nodes, and light-green foliage make them unique among decorative plants. The uses of this species are limited to the manufacture of furniture, numerous household articles, and fancy fishing poles, for all of which these black bamboos are peculiarly suited." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 29.*)

For previous introduction, see S. P. I. No. 37555.

42664. PHYLLOSTACHYS BAMBUSOIDES Sieb. and Zucc. Poaceæ.
Bamboo.

This is one of the finest hardy bamboos, very hardy and free growing, with stems 10 to 18 feet high, and long branches. Stem sheaths are pinkish when young, conspicuously mottled with deep purple. The leaves are among the largest in the hardy Phyllostachys group, varying from 2½ to 6 inches long, one-half to 1¼ inches wide, bright green above, glaucous beneath. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 152.*)

"The arrow bamboo is that of which the stems are still employed in the manufacture of the fine Japanese arrows used generally for archery purposes. It is not very commonly seen in gardens, so far as observed, even in Japan, and the arrow makers, it is said, get their main supply of stems from wild plants. There are some of these manufacturers in the town of Shidzuoka, but the demand for arrows is so small that they are doing a poor business. This species is distinguished from others by the fact that it does not have an actively creeping rootstock. Each plant forms a separate small clump by itself. The hardness of the culms, their small cavity, and the smoothness of the nodes, as well as their small size, are characteristics that well adapt them for arrow making. This is believed to be a hardy species, and it is quite unlike the ordinary bamboos in appearance." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 30.*)

42665. PHYLLOSTACHYS BAMBUSOIDES MARLIACEA Houzeau. Poaceæ.
Bamboo.

A variety of *Phyllostachys bambusoides*, distinguished by the curious wrinkling of the stems, especially toward the base. It does not appear to be so vigorous as the species, but behaves more like *P. mitis* in regard to hardiness. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 152.*)

42666. PHYLLOSTACHYS KUMASACA (Zoll.) Munro. Poaceæ. Bamboo.

A pretty bamboo, suitable for a damp spot in the rock garden, being of a neat, tufted habit. It is one of the most distinct of all hardy bamboos, especially in its sturdy, zigzag stem (1 to 2 feet high, very much

42649 to 42673—Continued.

flattened between the joints), the great proportionate width of the leaves, their length of stalk, and the uniformly short branches which occur three or four at each joint, 1 to 2½ inches long, bearing one to three narrowly ovate leaves 3 to 4 inches long and three-fourths to 1 inch wide. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 152.*)

42667. PHYLLOSTACHYS AUREA A. and C. Rivière. Poaceæ. Bamboo.

A bamboo somewhat resembling *Phyllostachys mitis*, which is, however, a taller species without the crowded joints at the base of the stem and without the swollen band beneath the joint, which is so distinctive a character in *P. aurea.* The stems are pale yellowish green, 10 to 15 feet high, stiffly erect, growing in tufts and spreading slowly. Beneath each joint there is a curious swollen band about one-fourth of an inch wide. The leaves are 2 to 4½ inches long and one-third to seven-eighths of an inch wide. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 149.*)

"Mr. Mitford remarks that this species should be planted in large, bold masses for good landscape effect, for if single plants are set out they send up shoots only near the mother culm and produce a switch-like effect. The shoots of this species are edible, according to the Japanese books, and are of even better flavor than those of *P. mitis;* but this variety does not appear to be grown for food." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 30.*)

42668. BAMBOS VULGARIS Schrad. Poaceæ. Bamboo.

An Indian bamboo, with bright-green stems, 20 to 80 feet high and with numerous branches weighted with dense foliage. Leaves usually 6 to 10 inches long, two-thirds to 1⅓ inches wide. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 448.*)

"A species growing in Satsuma, the southern province of Japan, but which is not hardy at Yokohama. It is propagated differently from the hardy sorts, as new shoots are borne from the base of the culm as well as from the rhizome. This species is said to be easy to propagate because of this character, but it will probably have a chance to succeed in the United States only in subtropical Florida and Texas, where it will require a good soil, rich in humus." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 34.*)

42669. BAMBOS ARGENTEO-STRIATA Regel. Poaceæ. Bamboo.

May be the same golden bamboo known as *Bambos vulgaris* var. *aureo variegata.* This resembles the species, but has canes of rich golden yellow color, penciled with green. (See *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 448.*)

42670. BAMBOS NANA ALPHONSE-KARRI (Mitf.) Makino. Poaceæ. Bamboo.

A variegated form of *Bambos nana*, with young stems striped with white and pink, older stems yellow with broad green stripes. (See *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 449.*)

42649 to 42673—Continued.

42671. Bambos vittato-argentea Hort. Poaceæ. Bamboo.

A variegated or blue bamboo of gardens, the taichochiku of the Japanese. Often attains the size of *Bambos argentea*, but leaves are still more blue on the under side and smaller and more delicate. They are striped and edged with white. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 449.*)

42672. Bambos aureo-striata Regel. Poaceæ. Bamboo.

A slender, low-growing bamboo 1 to 2 feet high, with lanceolate or somewhat ovate leaves, pointed at the apex and narrowed at the base into a short petiole. (Adapted from *Munro, Monograph of the Bambusaceæ,* in *Transactions of the Linnean Society of London, vol. 26, p. 116.*)

42673. Bambos senanensis Franch. and Savat. Poaceæ. Bamboo.

A Japanese bamboo, 10 or more feet high, with rather large, broad leaves and sheaths of deep-green hue. (Adapted from *Satow, Cultivation of Bamboos in Japan, p. 65, 1899.*)

42674 and 42675. Diospyros kaki L. f. Diospyraceæ. **Kaki.**

From Okitsu, Japan. Cuttings presented by Prof. Ishiwara, director, Government Horticultural Experiment Station. Received May 8, 1916. Notes by Mr. T. Kiyono, Semmes, Ala.

42674. "No. 72. *Kuharu.* Sweet. Kumamoto Province."

42675. "No. 73. *Gauzan.* Sweet. Kumamoto Province."

42676. Hedysarum boreale Nutt. Fabaceæ.

From Saskatoon, Saskatchewan, Canada. Presented by Mr. W. E. Lake, University of Saskatchewan. Received May 1, 1916.

A perennial leguminous herb with compound leaves and showy racemes of many magenta to white flowers. Native of Newfoundland and northern New England to Alaska.

"The possibility of crossing this with *H. coronarium* is suggested, in view of the great forage value but tender character of the Mediterranean species." (*Fairchild.*)

For previous introduction, see S. P. I. No. 41555.

42677. Lathyrus pratensis L. Fabaceæ. **Yellow vetchling.**

From Dublin, Ireland. Presented by Sir F. W. Moore, director, Royal Botanic Garden, Glasnevin. Received May 2, 1916.

A low straggling perennial, having leaves of two bright green leaflets and four to nine flowered peduncles of yellow flowers. Adventive in fields and waste places from New Brunswick to New York and Ontario; native of Europe and Asia.

For previous introduction, see S. P. I. No. 32193.

42678. Osterdamia matrella (L.) Kuntze. Poaceæ. **Grass.**
(*Zoysia pungens* Willd.)

From Taihoku, Formosa. Plants presented by Mr. M. Takata, Department of Productive Industries. Received May 6, 1916.

Grass from the Far East, often known as *Zoysia pungens*. Seems to be succeeding in Florida as a lawn grass.

For previous introduction, see S. P. I. No. 42389.

42679 to 42681.

From Kieff, Russia. Procured through Messrs. St. Przedpelski and T. Antoniewicz. Received May 3, 1916.

42679. AMMODENDRON CONOLLYI Bunge. Fabaceæ.

A hardy evergreen, silky leaved shrub from Siberia.

For previous introduction, see S. P. I. No. 31330.

42680. ELAEAGNUS ANGUSTIFOLIA L. Elæagnaceæ. **Oleaster.**

Small European shrub with silvery foliage.

For previous introduction, see S. P. I. No. 40214.

42681. LARIX SIBIRICA Ledeb. Pinaceæ. **Larch.**

A Siberian larch, closely related to European larch. Perennial tree, to 90 feet high, with ascending branches. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 886.*)

42682. ARTEMISIA CINA Berg. Asteraceæ. Wormseed.

From Petrograd, Russia. Procured through Dr. A. A. Fischer de Waldheim, director, Royal Botanic Garden. Received May 4, 1916.

The plant is a low and straggling undershrub, with erect branches, abounding in the deserts of Turkestan, where all the drug santonica is collected in July and August by native tribes. It belongs to a perplexing group of species of this difficult genus, variously regarded by different botanists as distinct species or as varieties of the polymorphous species, *Artemisia maritima* L. The drug is composed of the dried unexpanded flower heads, and forms a yellowish green (at length greenish brown) somewhat glossy, mobile mass, having a strong and peculiar, somewhat camphoraceous odor and an aromatic and bitter taste; it is used as an anthelmintic especially for roundworms.

42683 to 42698.

From Paris, France. Plants purchased from Vilmorin-Andrieux Company. Received May 6, 1916. Descriptions adapted largely from Vilmorin, Catalogue des Plantes.

42683. ACTINIDIA CALLOSA HENRYI Maxim. Dilleniaceæ.

A climbing plant introduced from central China by Wilson. Leaves persistent, coriaceous, lanceolate, finely dentate, 15 cm. long. They are bronze red, passing into a metallic green and in autumn take on a beautiful reddish color. This plant is entirely distinct from its relatives and is remarkable for the size of its leaves. Found by Wilson and Henry in western Hupeh and Szechwan as a climber reaching a height of 7 meters, with fragrant white flowers and greenish ovoid or elongated fruit.

For previous introduction, see S. P. I. No. 34529.

42684. AMPELOPSIS LEEOIDES (Maxim.) Planch. Vitaceæ.

An Asiatic species, introduced by Wilson, very distinct and remarkable because of its pinnate leaves, composed of five very long leaflets,

42683 to 42698—Continued.

pointed and shining. This plant is very vigorous and may attain several meters in height; it will cover walls and trellises well. It is a southern Japanese species allied to *Ampelopsis megalophylla*.

42685. Buddleia nivea yunnanensis (Dop.) Rehd. and Wils. Loganiaceæ.

Of the same group as *Buddleia variabilis*. Branches and lower sides of the leaves whitish. It is remarkable for its very beautiful, delicate mauve flowers, which have a very pleasant perfume and are arranged in a large lengthened spike. Flowers from July to October. Height, 1½ to 3 meters. Wilson says this variety is much more widely distributed than the type and is readily distinguished by its usually solitary terminal panicle and much larger flowers, attaining 5 mm. in diameter; the leaves are usually pubescent above and vary in size and are sometimes nearly entire, coarsely serrate, or sinuately toothed. From western Szechwan.

42686. Clematis armandi Franch. Ranunculaceæ. **Clematis.**

A new climbing Chinese species, exceptional in its strongly persistent, coriaceous, trifoliolate, dark shining blue-green leaves. Flowers pure white, 5 cm. across, in many-flowered axillary panicles. Flowers in April. Climbs to a height of 5 m. or more. Collected by Wilson and Henry in western Hupeh and Szechwan. Called *Wei ling hsien* by the Chinese in Hupeh.

42687. Clematis montana wilsonii Sprague. Ranunculaceæ. **Clematis.**

A white-flowered climbing variety, recently introduced from Hupeh, Szechwan, and Yunnan by Wilson. Flowers very abundant, fasciculate, sometimes a little yellowish or rosy on the outside, produced in June and July with generally a second flowering in the autumn. This plant is very superior to its relatives.

42688. Clematis vedrariensis Hort. Ranunculaceæ. **Clematis.**

Obtained at Verrieres by crossing *Clematis chrysocoma* and *C. montana rubens*. This very beautiful hybrid is more vigorous and more branching than the latter. It has preserved the beautiful rose color of the latter, but is a trifle paler. The flowers are also much larger and measure up to 7 cm. in diameter. Flowers in May and June. Height, 5 to 6 meters. The plant is of great value for decorating arbors, trellises, etc.

42689. Pyracantha crenulata yunnanensis Vilm. Malaceæ.

A new variety from seed received from China by Mr. Maurice L. Vilmorin, differing from the type in its greater vigor, its longer spines, and its less dentate leaves. The fruits of a brighter coral red are smaller but more abundant, and hang on the shrub until January. It attains a height of 1 to 3 meters.

42690. Cotoneaster nan-shan Hort. Malaceæ.

Introduced from China by Mr. Maurice L. Vilmorin. This new species is well characterized by its stiff branches and small foliage. Flowers white, fruits very large, bright red, ripening in October. Serves admirably for the decoration of rock slopes and rockeries. Height, 15 to 20 cm.

42683 to 42698—Continued.

42691. Deutzia longifolia veitchii (Veitch) Rehder. Hydrangeaceæ.

Introduced recently from Yunnan, this new Deutzia is without doubt the one whose flowers are the largest and the most brilliantly colored. They are of a beautiful rose, with deep lilac coloring inside and out, arranged in numerous small clusters along the branches. They bloom in May. The plant is very vigorous, hardy, flowers very young; is easily forced. It is said to be one of the most interesting novelties introduced from China recently. Received a certificate of merit from the National Society of Horticulture of France.

42692. Lonicera similis delavayi (Franch.) Rehder. Caprifoliaceæ. **Honeysuckle.**

A very vigorous new honeysuckle from western China, with long climbing branches, and lengthened, very velvety leaves. The young branches are covered their whole length with odorous flowers, at first white, then yellow, arranged in pairs, and continuing to appear from June until frost, with an abundant flowering in autumn.

42693. Paulownia duclouxii Dode. Scrophulariaceæ.

A recently introduced tree from Yunnan, China, differing from the common Paulownia in its white flowers, being slightly rosy and without spots. It flowers at the end of winter before the leaves appear.

42694. Potentilla fruticosa vilmoriniana Komarow. Rosaceæ.

Introduced from China by Mr. Maurice L. Vilmorin, this new Potentilla forms a tufted shrub, very erect, 1 meter in height, with silky, very silvery foliage, and is covered during the whole season with pale sulphur-yellow flowers, larger than those of the species. Very suitable for massing in a shrubbery border.

42695. Rodgersia aesculifolia Batal. Saxifragaceæ.

A vigorous plant newly introduced from China, with large rhizomes and slender petioles supporting six large, umbellate, oval leaves, heavily veined, and of beautiful dark green, resembling those of the chestnut. Flowers white, in a long panicle, 75 cm. long, appearing in June. Flourishes in cool, half-shaded, peaty soils.

42696. Syringa giraldii Sprenger. Oleaceæ. **Lilac.**

Originally from the north of China, this lilac, which is still little known, is chiefly remarkable for its early flowering, which takes place in Paris at the beginning of April. The beautiful flowers are white, slightly marked with lilac, in loose thyrses, and as odorous as those of the common lilac. It reaches a height of 3 to 4 meters.

42697. Viburnum carlesii Hemsl. Caprifoliaceæ.

A Korean tree recently introduced and little known, reaching a height of about 1 meter; of open habit, with opposite subsessile, rounded pubescent, deciduous leaves, and very odorous white flowers, flushed with rose in terminal umbels, appearing in May. Flourishes in cool, semishady places with little lime; forces very easily; recommended for border for mass plantings of rhododendrons and azalea.

42683 to 42698—Continued.

42698. VIBURNUM DAVIDI Franch. Caprifoliaceæ.

Introduced from China through the efforts of Mr. Maurice L. Vilmorin, this new viburnum is one of the most distinct and most remarkable of the genus. It is a low plant, entirely hardy, with large persistent, shining leaves resembling those of a rhododendron, the shoots of the year terminating in an umbel of white flowers, appearing in April. These flowers are succeeded by steel-blue fruits, ripening in autumn. It attains a height of 25 to 50 cm., and flourishes in shady, peaty soil. Received a certificate of merit from the National Society of Horticulture of France in 1913.

42699 to 42706. HOLCUS SORGHUM L. Poaceæ. Sorghum.

(*Sorghum vulgare* Pers.)

From Donga, Northern Nigeria. Presented by Mr. C. L. Whitman, Sudan United Mission, London.

"Belonging to the *Shallu* group."

42699. Straw-colored glumes, light red seed.

42700. Reddish brown glumes, medium red seed.

42701. Black glumes, light red seed.

42702. Straw-colored to brown glumes, yellow-pink seed.

42703. Dark red glumes, light red seed.

42704. Straw-colored to brown glumes, light-red seed.

42705. Light straw-colored glumes, white seed.

42706. Black glumes, white seed.

42707. ATTALEA COHUNE Mart. Phœnicaceæ. Cohune palm.

From Ceiba, Honduras. Presented by Mr. F. J. Dyer, American consul. Received May 11, 1916.

"It is known as the *Cohune* or *Monaco* palm, these names being variously applied to different stages of its growth. For a series of years it remains acaulescent and barren, its huge leaves rising nearly erect from the ground. Even after the trunk has reached a height of 10 or 15 feet or more, and has long been in bearing, it usually remains covered to the ground with the persistent bases of the sheathing petioles. Finally these are gradually dropped, and the tree shows a clean cylindrical trunk of 30 to 50 feet or more. The blade of the leaf is 15 to 20 feet long, vertical in position, and describing a most graceful curve, its numerous divisions entirely distinct (an inch or more broad and an inch or two apart) and conduplicate at the base. The leaves are used for thatching, but are much inferior to the less divided and flatter leaves of the Manicaria. The fruiting spadix is loaded with five to eight hundred or more nuts, which are elliptic-ovate and 2½ inches long, not including the broadly conical beak. The thick bony endocarp incloses usually a single seed, sometimes two or rarely three. (*Asa Gray, Proceedings of the American Academy of Arts and Sciences, vol. 21, pp. 464–465.*)

"The tree producing these nuts is very plentiful in this locality and the yield is quite heavy. I believe that a large business can be developed in extracting oil." (*Dyer.*)

42708 to 42715.

Received from Mr. W. S. Bogdan, in charge of the agricultural experiment station at Krasny Koot, Samara Government, southeast Russia.

"The climate in the lower Volga region, where Krasny Koot is situated, is decidedly semiarid, with long, hot summers and dry, cold winters, and settlers have suffered much from failure of crops on account of introduced seed not being suitable to the locality. Mr. Bogdan has experimented primarily with native species of forage plants and has developed some very promising varieties suitable to local conditions. In certain of our semiarid Western States his selections may prove to be successful." (*F. N. Meyer.*)

42708 to 42713. AGROPYRON CRISTATUM (L.) Beauv. Poaceæ. **Wheat-grass.**

42708 to 42710. Received as *Agropyron desertorum.*

42711 to 42713. [No notes.]

42714 and 42715. MEDICAGO FALCATA L. Fabaceæ. **Alfalfa.**

A species closely allied to *Medicago sativa*, common alfalfa; but possessing sickle-shaped pods.

42716. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Tsama melon.**

From Johannesburg, Union of South Africa. Procured from Mr. J. Burtt Davy, botanist, Agricultural Supply Association. Received May 9, 1916.

The famous forage melon of the Kalahari Desert, which furnishes forage for cattle on the sandy plains, flourishing under temperatures of 110° F. on almost pure sand with very low rainfall. Of no value for table use, but it may be useful in melon breeding.

For previous introduction, see S. P. I. No. 41164.

42717 to 42720.

From Colombia. Presented by Mr. H. M. Curran. Received April 15, 1916.

42717. ARRABIDAEA sp. Bignoniaceæ.

"An ornamental vine, on the Magdalena River, above Calamar." (*Curran.*)

A bignoniaceous ornamental climbing shrub, native of South America, having small flowers arranged in large terminal panicles. (Adapted from *Lindley, Treasury of Botany, vol. 1, p. 93.*)

42718. MAXIMILIANEA sp. Cochlospermaceæ.
(*Cochlospermum* sp.)

A small tree or shrub having palmately lobed alternate leaves, furnished with long stalks and large yellow flowers in terminal panicles that wither before the leaves make their appearance. The capsular fruit when ripe is in form and size like a pear and opens with three or five valves. The seeds are small, very numerous, and covered with a cottony down. (Adapted from *Lindley, Treasury of Botany, vol. 1, p. 305.*)

42719. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ. **Algaroba.**
(*P. juliflora* DC.)

See S. P. I. No. 42643 for previous introduction and description.

42717 to 42720—Continued.

42720. Toluifera balsamum L. Fabaceæ. **Toulu.**
(*Myroxylon toluiferum* H. B. K.)

"A small tree from the Magdalena River, above Calamar." (*Curran.*)

A tropical American tree or shrub of the bean family having unequally pinnate leaves marked with pellucid dots. The flowers are white or rose colored, in axillary or terminal clusters, with a bell-shaped, 5-toothed calyx and a papilionaceous corolla. The fruit is indehiscent, with one or two seeds, and borne on a stalk, the upper part of which is winged. The seeds have a myrrhlike odor. (Adapted from *Lindley, Treasury of Botany, vol. 2, p. 772.*)

For previous introduction, see S. P. I. No. 42272.

42721. Fragaria vesca L. Rosaceæ. **Strawberry.**

From Ambato, Ecuador. Presented by Mr. Abelardo Pachano, Escuela de Agronomia. Received May 10, 1916.

"This plant is a native of the Andes. Closely related to the *frutilla*, and is known under the name *fresa*. The fruit is much smaller [than *frutilla*] and rather acid in taste, but the plant is highly ornamental and well adapted for garden borders. I have been unable to detect whether these seeds belong to the *F. vesca* or to the *F. reniforme*, as the plants were in very bad condition when they were brought to me." (*Pachano.*)

42722. Normanbya merrillii Beccari. Phœnicaceæ. **Palm.**

From Manila, Philippine Islands. Presented by Mr. E. D. Merrill, botanist, Bureau of Science. Received May 12, 1916.

"*Bonga de China* or *Bonga de Jolo.* A medium-sized palm with graceful, somewhat curved, pinnate leaves, somewhat resembling the common betel-nut palm, but not so tall. The leaves are rather glaucous, and the pretty crimson fruits are borne just below the leaves in medium-sized bunches, the individual fruits being less than 1 inch long. One of our most ornamental medium-sized palms, which thrives remarkably well in Manila." (*Merrill.*)

42723 to 42729.

From San Martin de Loba, Bolivar, Colombia. Presented by Mr. H. M. Curran. Received April 29, 1916. Quoted notes by Mr. Curran.

42723. Annona sp. Annonaceæ. **Guanavito.**

"*Guanavito.* A low shrub with glossy ornamental leaves and the habits of Cratægus. Fruit orange-red, specimens obtained about 2 inches in diameter, flesh rather dry as compared with cultivated varieties. Would make a good hedge. Low lands, in dense thickets."

42724. Coccolobis sp. Polygonaceæ.

"Small, round-headed ornamental tree; fruit said to be edible."

42725. Britoa acida (Mart.) Berg. Myrtaceæ. **Guayabo.**

"Large-fruited guava; fruit soft, yellow, few seeds, very acid and juicy."

For previous introduction, see S. P. I. No. 28061.

42726. Bixa sphaerocarpa Triana. Bixaceæ. **Achuete.**

The fruits of this species are spherical instead of cordiform, as are those of *Bixa orellana.*

42723 to 42729—Continued.

42727. Hymenaea courbaril L. Cæsalpiniaceæ. **Courbaril.**

"Large ornamental timber tree. Fruit edible."

42728. Sapindus saponaria L. Sapindaceæ. **Soapberry.**

"A small tree with a heavy crop of fruit, on sandy hills near the river."

For previous introduction, see S. P. I. No. 42038.

42729. Stigmaphyllon sp. Malpighiaceæ.

"*Bejuco de sapo.* Ornamental climber, shiny clusters of purple-tinted fruits in great profusion. Grows over forest trees."

42730. Pinus bungeana Zucc. Pinaceæ. **White-barked pine.**

From Peking, China. Presented by Mr. John V. A. MacMurray, secretary, American Legation, at the request of Mr. F. N. Meyer, of the Bureau of Plant Industry. Received May 6, 1916.

"A very beautiful pine with silvery-white bark; a slow grower, but extremely striking when old. The bark peels off in flakes, like the sycamore, but the foliage is not so dense as that of most other pines." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 41954.

42731 to 42733.

From Issylkul, Akmolinsk Government, Siberia. Presented by Mr. I. M. Karzin. Received May 1, 1916.

42731. Triticum durum Desf. Poaceæ. **Durum wheat.**

Velvety.

42732. Hordeum vulgare coeleste L. Poaceæ. **Barley.**

Subvariety *violaceum.* "New race of naked barley, found by me in midst of varieties obtained from China, which were being tested in the experimental field at Deliankakh; and called by Mr. R. Regel, of the Bureau of Practical Botany at Petrograd, *Hordeum karzinianum.*" (*Karzin.*)

42733. Medicago sativa L. Fabaceæ. **Alfalfa.**

"Wild lucerne from the steppes of Semiroins Province." (*Karzin.*)

Received as *M. caerulea* Lessing.

42734 to 42739.

From Petrograd, Russia. Presented by Dr. A. A. Fischer de Waldheim, director, Royal Botanic Garden. Received May 1, 1916.

42734. Avena barbata Brot. Poaceæ. **Oats.**

An annual grass, with many-nerved glumes, two or three florets to the spikelet, occurring throughout the Spanish Peninsula. (Adapted from *Lázaro ë Ibiza, Compendia de la Flora Española, 2d ed., vol. 1, p. 681.*)

42735. Aquilegia brevistyla Hook. Ranunculaceæ. **Columbine.**

A perennial herb with small, twice-ternate leaves and small flowers 12 to 18 mm. long. The blade of the petals is yellowish, shorter than the blue sepals and longer than the blue spurs. An alpine plant of the central Rocky Mountains. (Adapted from *Coulter and Nelson, New Manual of Rocky Mountain Botany, p. 192, 1909.*)

42734 to 42739—Continued.

42736. Aquilegia lactiflora Kar. and Kir. Ranunculaceæ. **Columbine.**

A hardy perennial columbine from the Altai Mountains, Siberia; usually about 1½ feet high, with the sepals nearly white or tinged with blue. Desirable species, not much planted. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 340.*)

42737. Aquilegia viridiflora Pall. Ranunculaceæ. **Columbine.**

A greenish flowered columbine from eastern Siberia. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 340.*)

42738. Fragaria moschata Duchesne. Rosaceæ. **Hautbois strawberry.**

A plant similar to the alpine strawberries, but taller, usually diœcious and more pubescent; the hull strongly deflexed from the fruit; pale red berry. It is cultivated in Europe. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 605.*)

42739. Ribes graveolens Bunge. Grossulariaceæ.

This species is said by Janczewski to be merely a pubescent-leaved variety of *R. fragrans.* (For technical description, see *De Janczewski, Monographie des Groseilliers, Mémoires de la Société de Physique et Historie Naturelle de Geneve, vol. 35, p. 343, 1905.*)

42740. Cacara erosa (L.) Kuntze. Fabaceæ. **Yam-bean.**
(*Pachyrhizus angulatus* Rich.)

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received April 26, 1916.

Received as two varieties, mixed by mistake.

42741. Indigofera tinctoria L. Fabaceæ. **Indigo.**

From Paris, France. Purchased from Vilmorin-Andrieux Company. Received April 28, 1916.

The common indigo of commerce.

42742 to 42748.

From Chefoo, China. Presented by Mr. A. Sugden, Commissioner of Chinese Maritime Customs, through Mr. John F. Jewell, American consul, Chefoo. Received May 11, 1916. Cuttings of the following:

42742 to 42747. Amygdalus persica L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

42742. No. 1. Autumn peach.
42743. No. 2. Green peach.
42744. No. 3. Green peach.
42745. No. 4. Mountain peach.
42746. No. 5. Late green mountain peach.
42747. No. 6. A native Chefoo peach.

42748. Prunus sp. Amygdalaceæ. **Prune.**

"No. 7. Remarkable Chinese variety. Very productive in its natural state, round, rough, clear firm flesh, *Mirabelle* color, sweet, red juice; ripe in August; very good for tarts, jams, jellies, etc." (*Sugden.*)

42749 to 42758.

From Nancy, France. Presented by Prof. Edmond Gain, director, Botanic Garden. Received April 17, 1916.

42749. RIBES LOBBII A. Gray. Grossulariaceæ.

It should be particularly looked for in California, north of San Francisco Bay, and along the coast to British Columbia. The species may be distinguished by its dark purplish red calyx half an inch in length, not counting the ovary, nearly white petals half the length of the stamens, very glandular but unarmed ovary, and especially by the short, oval, and very blunt anthers which are dotted by a few warty glands on the back. These short and blunt anthers are shared with some species but not with others. (Adapted from *A. Gray, American Naturalist, vol. 10, p. 274.*)

42750 to 42757. RUBUS spp. Rosaceæ. Bramble.

42750. RUBUS DISCOLOR Weihe and Nees.

A bramble from the western Himalayas at altitudes of 3,000 to 7,000 feet and westward through Afghanistan and Europe to the Atlantic. Flowers pink, about three-fourths of an inch in diameter; fruits small, globose, black.

42751. RUBUS FASTIGIATUS Weihe and Nees.

A robust, nearly erect plant with ternate leaves and simple panicles of large, white flowers. (For technical description, see *Genevier, Monographie des Rubus du Bassin de la Loire, p. 41, 1881.*)

42752. RUBUS GODRONII Lec. and Lam.

Red flowering Rubus with leaves quite tomentose on the under side. Closely allied to *Rubus diversifolius* and *R. callianthus.* (For technical description, see *Genevier, Monographie des Rubus du Bassin de la Loire, p. 41, 1881.*)

42753. RUBUS HIRTUS Waldst. and Kit.

"A prostrate, sometimes climbing shrub, with the stems covered with stalked glands and hairs, and furnished with straight, bristlelike prickles. Leaflets usually three, occasionally five, on vigorous stems, broadly oval, rounded at the base, shortly pointed, coarsely toothed, dark green and bristly above, very hairy on the veins beneath. Flowers white, produced in large panicles, the main stalk furnished with violet-colored or purple gland-tipped hairs and bristles. Fruit globular; the sepals erect. A common species in Great Britain, very characteristic of the group with glandular hairs and bristles on the inflorescence." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 452.*)

42754. RUBUS LEJEUNEI Weihe and Nees.

A bramble with procumbent stems and large flowers with red petals and stamens. In thickets at Malmedy. (Adapted from *Bluff and Fingerhuth, Flora Germanica, vol. 1, p. 683, 1825.*)

42755. RUBUS NITIDUS Weihe and Nees.

Suberect species with large rose-colored flowers, closely allied to *Rubus cordifolius*, but differing in the colored petals. (For technical description, see *Genevier, Monographie des Rubus du Bassin de la Loire, p. 342, 1881.*)

42749 to 42758—Continued.

42756. RUBUS RUDIS Weihe and Nees.

"A shrub with subprostrate or low arching stems of dark purplish color, armed with short decurved prickles, and furnished with numerous stalked glands. Leaves large among brambles, and composed of three or five leaflets. Leaflets whitish downy beneath, becoming greenish, the terminal one oval or obovate, with a slenderly tapered point, doubly toothed. Flowers pink, borne on a loose, wide panicle, the stalks downy and thickly furnished with shortly stalked glands. Fruit small. Common in the south of England and wild in the neighborhood of Kew. Distinguished by its thickly glanded stems and inflorescence. Nearly allied to and sometimes confused with it, but more widely spread northwards, is *Rubus echinatus*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 453.*)

42757. RUBUS WAHLBERGII Arrhen.

A species said to be midway between *Rubus lindenbergii* and *R. caesius*. Native in parts of Germany. (For full technical description, see *Ascherson und Graebner, Synopsis der Mittel Europäischen Flora, vol. 6, pt. 1, p. 646.*)

42758. AVENA LUDOVICIANA Durieu. Poaceæ. **Oats.**

A form apparently closely allied to *Avena sativa.*

42759 and 42760.

From Rochester, N. Y. Presented by Mr. John Dunbar. Received May 17, 1916, seedlings of the following:

42759. CORNUS PAUCINERVIS Hance. Cornaceæ. **Cornel.**

Shrub 1 to 3 meters tall, white flowers, black fruit. From western Hupeh and western Szechwan. (Adapted from *Plantae Wilsonianae, vol. 2, pt. 3, p. 577.*)

42760. MALUS GLAUCESCENS Rehder. Malaceæ. **Crab apple.**

"The earliest of the American crab apples to flower, *Malus glaucescens*, is a native of New York and of Ontario and is a treelike shrub or small tree distinguished from the other northern species by the pale lower surface of the leaves and the hairy covering on the outer surface of the calyx of the flower." (*Arnold Arboretum, Bulletin of Information, new ser., vol. 1, 1915.*)

42761 to 42764. CICER ARIETINUM L. Fabaceæ. **Chick-pea.**

From Barcelona, Spain. Procured through Mr. Carl Bailey Hurst, American consul general. Received April 25, 1916.

42761. "Variety *Andaluz*, superior."

42762. "Variety *Corriente*, 1^a, Andaluz."

42763 "Variety *Andaluz*, extra."

42764. The packages were broken when received and the following varieties were mixed: Type Alfarnate-superior; type Alfarnate-extra; variety Corriente-Andaluz. These are evidently place names only.

42765. Engelhardtia aceriflora (Reinw.) Blume. Juglandaceæ.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received May 16, 1916.

A very tall tree, with compound leaves somewhat like those of the walnut, and inconspicuous flowers disposed in drooping, spicate panicles. These are succeeded by little fruits which are about the size of a pea, each seated on the base of a three-lobed, beautifully veined and colored bract. These are often more than a foot long and hang very gracefully among the foliage. (Adapted from *Lindley, Treasury of Botany, pt. 1, p. 451.*)

42766. Rubus ulmifolius bellidiflorus (Koch) Focke. Rosaceæ. **Bramble.**

From Amsterdam, Netherlands. Presented by the director, Botanic Garden, University of Amsterdam. Received May 15, 1916.

A very handsome, double-flowered pink bramble, commonly used for planting in England. Each flower produces an extraordinary number of narrow petals, making a gay display in July and August. This bramble is highly recommended for half-shady woodlands.

42767. Pavetta zimmermanniana Valet. Rubiaceæ.

From Buitenzorg, Java. Seeds presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received May 12, 1916.

A small rubiaceous tree or shrub, with opposite, nearly elliptic leaves and clusters of small, slender-tubed white flowers.

"The remarkable researches of Zimmerman and Faber (detailed in the Jahrbücher für Wissenschaftliche Botanik, vol. 51, p. 285, 1912, and vol. 54, p. 243, 1914) make this species of unusual interest. Faber has proved that the leaves of this and of several other species of Pavetta, Psychotria, and possibly other genera of the Rubiaceæ contain colonies of a nonmotile, nitrogen-fixing bacterium which he names *Myco-bacterium rubiacearum.* The bacteria of this genus almost invariably inhabit the micropyle of the young seed, and, when the seed germinates, grow through certain stomata of the very young leaves and into the intracellular spaces formed in the leaf tissues around these stomata. Cavities are formed through the growth of the epidermal cells which later close entirely and make bacterial nodules which are deeply imbedded in the leaf tissues. A single leaf may have several dozen of these symbiotic bacterial nodules. Faber was able, by treating the seeds with hot water and a sublimate solution, to kill the inhabiting myco-bacteria and, later, to infect part of the seedlings grown from these seeds with pure cultures of the bacterium. The artificially infected seedlings grown in soil free from combined nitrogen grew well and remained healthy for four months, whereas those not so infected turned yellowish white and died in three or four weeks. The plants from unsterilized seeds produced leaves bearing many more bacterial nodules than did those from sterilized seeds which were later artificially inoculated. In view of the facts that these rubiaceous plants with bacterial nodule-bearing leaves occur in many parts of the Tropics and that in India, at least, the value of their leaves for manure has long been recognized, and considering the value of nitrogen-fixing legumes as fertilizers, the suggestion of Faber that we may have in these tropical trees and shrubs plants of positive agricultural value for the tropical planter is well worthy of consideration. The value of the mulch formed by the leaves of leguminous and other plants is keenly appreciated by the best cultivators; and it may be possible to find suitable small shrubs of Pavetta or other rubiaceous plants which will be worth while growing for their nitrogen-fixing leaf bacteria in the orchards of our semi-Tropics or wherever else the climate will permit of their cultivation." (*Fairchild.*)

42768 to 42789.

From Madrid, Spain. Presented by the curator, Botanic Gardens. Received May 8, 1916.

42768. AVENA STERILIS L. Poaceæ. Oats.

So-called animated oats, closely resembling *Avena fatua*, wild oats, but with larger spikelets. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 435.*)

42769 to 42775. ASPARAGUS spp. Convallariaceæ. Asparagus.

42769. ASPARAGUS CAPENSIS L.

A shrubby plant with large, spreading prickles; ascending, rather flexuous, woody branches; and branchlets in dense clusters, one-fourth to 1 inch long. Flowers produced only from tips of the branches, and usually solitary, about one-eighth of an inch long. (Adapted from *Baker* in *Flora Capensis, vol. 6, p. 263.*)

42770. ASPARAGUS OFFICINALIS L.

42771. ASPARAGUS MARITIMUS Mill.

An herbaceous perennial, native to the coasts of Europe and northern Africa. The erect, much-branched stems are round; the subulate, angled cladodes are in fascicles of six to eight; and the small flowers, one-half the length of the pedicel, produce globose fruits. (Adapted from *Boissier, Flora Orientalis, vol. 5, p. 336.*)

42772. ASPARAGUS OFFICINALIS L.

42773. ASPARAGUS SCANDENS Thunb.

A slender, climbing vine up to 6 feet high, with freely branching green stems, the branches with twigs and cladodes in one plane. This ornamental asparagus thrives more in an intermediate house, and is a good decorative plant when grown in strings for table decorations. It is also good as a pot plant. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 408.*)

42774. ASPARAGUS STIPULARIS Forsk.

An herbaceous perennial, native of the Mediterranean region. It has erect stems with angle-grooved branches, cladodia 2 inches long, and small flowers followed by berries the size of a pea. (Adapted from *Muschler, Manual Flora of Egypt, vol. 1, p. 230.*)

42775. ASPARAGUS TRICHOPHYLLUS Bunge.

A hardy, herbaceous perennial from northern Asia, twining to a height of 6 feet with cladodes like an ordinary asparagus.

42776. CARYOPTERIS MONGHOLICA Bunge. Verbenaceæ.

An ornamental, woody plant grown for its lavender-blue flowers, profusely produced in fall. The flowers are in densely clustered, axillary cymes and in this species less numerous but larger than in the commonly known *C. incana* (*C. mastacanthus*). (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 679.*)

42768 to 42789—Continued.

42777. Gleditsia caspica Desf. Cæsalpiniaceæ. **Honey locust.**

A very spiny tree, 30 to 40 feet high, the spines slightly flattened, 6 inches or more long. The flowers are green, almost sessile, in dense, downy racemes 2 to 4 inches long. Fruit scimitar shaped, about 8 inches long and an inch wide. This species is well worth growing because of its greater sturdiness than the ordinary honey locust and because of the size and number of its spines. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 595.*)

For previous introduction, see S. P. I. No. 42288.

42778. Pinus sp. Pinaceæ. **Pine.**

Received as *Pinus paroliniana* Webb [=*P. pyrenaica* Lapeyr.]; the seeds do not agree with our material of this species.

42779. Pyrus canescens Spach. Malaceæ. **Pear.**

A probable hybrid between *Pyrus nivalis* and *P. salicifolia*, between which species it is almost intermediate. This tree is very handsome in spring with its very white young leaves, which become shiny dark green above when mature. The fruit is pale green, with much shorter stalk than that of *P. nivalis*. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 289.*)

42780. Ribes flavum Berland. Grossulariaceæ. **Currant.**

Janczewski (Monographie des Grosseilliers, Mémoires de la Société de Physique et Historie Naturelle de Geneve, vol. 35, page 506, 1907) refers to this species as a variety of *Ribes aureum*, the common golden, or buffalo, currant of the central and western United States.

42781. Ribes multiflorum Kit. Grossulariaceæ. **Currant.**

This most striking of the red-currant group has yellowish green flowers crowded on slender, pendulous racemes, stems 5 inches long. It is a very good shrub, up to 6 feet high, with perhaps stouter unarmed branches than any other currant. The fruit is roundish, red when ripe; one-third of an inch in diameter, native of southern and eastern Europe. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 405.*)

42782 to 42789. Rubus spp. Rosaceæ. **Bramble.**

42782. Rubus hoffmeisterianus Kunth and Bouche.

A Himalayan species closely related to *Rubus gracilis* and *R. foliolosus*, but differing from the former in having all the leaflets suborbicular or broadly elliptic, pilose above, and the flowers in compact racemes; and from the latter in the form of the leaflets. (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica, vol. 72, pt. 2, p. 190.*)

42783. Rubus inermis Pourr.

This species is listed by Focke as a form under *Rubus ulmifolius*, a very large-branched plant without spines and commonly with ternate leaves. Of unknown origin. (See *Focke, Species Ruborum, Bibliotheca Botanica, vol. 83, pt. 2, p. 154, 1914.*)

42784. Rubus leucostachys Schleicher.

A British shrub distinguished by its round, bright pink or white petals and densely felted stems, leaves, and peduncles; the fruit is white and insipid.

42768 to 42789—Continued.

42785. Rubus lindleianus Lees.

A plant with tall, curving shoots, strong prickles, and cymose clusters of white or pale rose-colored flowers. (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica, vol. 85, pt. 1, p. 132, 1914.*)

42786. Rubus rhamnifolius Weihe and Nees.

This species from southern England has thick, leathery leaflets covered beneath with a felt of grayish white down and white or pale pink cup-shaped flowers borne in slender panicles.

42787. Rubus sanctus Schreber.

A very variable species between *Rubus rhamnifolius* and *R. gratus*, with strong, arched shoots; leaves composed of five leaflets; elongate racemes of white or pale rose-colored flowers. (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica, vol. 83, pt. 1, p. 136, 1914.*)

42788. Rubus thyrsiflorus Weihe and Nees.

A European species, with nearly prostrate, rarely climbing stems; leaves divided into three or five broad, irregularly toothed leaflets; rather small white flowers and small fruit. (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica, vol. 83, pt. 2, p. 244.*)

42789. Rubus vestitus Weihe and Nees.

A well-characterized, large-fruited species which has, however, in western Europe, a large number of forms, usually of local distribution. (For a complete technical description, see *Ascherson und Graebner, Synopsis der Mittel Europäischen Flora, vol. 6, pt. 1, p. 546.*)

42790. Vitex lucens Kirk. Verbenaceæ. **Puriri.**

From Avondale, Auckland, New Zealand. Seeds presented by Mr. H. R. Wright. Received May 13, 1916.

"A fine tree, from 50 to 60 feet in height, often called the *New Zealand* oak, on account of the strength and durability of its timber. It is not injured by damp or exposure and is therefore extremely valuable for shipbuilding purposes. The logs are often perforated with large holes, but these do not affect the timber, except in so far as it has sometimes to be cut to disadvantage. The holes are made by a soft-bodied grub, which develops into the puriri moth. The leaves of the *puriri* are handsome, being of a bright, glossy green, the leaflets 3 to 4 inches long. The flowers are in axillary panicles, four to eight together, pink or red, irregular in shape, and with exserted stamens. The roots of the *puriri* never penetrate deeply into the ground, but lie near the surface, so that the tree is easily blown over in a gale of wind. It is endemic in New Zealand and is restricted to the northern part of the North Island. It is easily cultivated and flowers more or less all the year round." (*Laing and Blackwell, Plants of New Zealand, p. 350.*)

"The New Zealand *puriri* is one of the most handsome trees in cultivation, and is worthy of more extensive planting. It transplants well, grows rapidly, and makes a compact tree of symmetrical bushy form, with bright glossy-green foliage. It is one of the New Zealand hardwoods used for railway sleepers, and is very durable. The berries when ripe resemble cherries, which tends to add to its beauty." (*Wright.*)

42791. ARTEMISIA CINA Berg. Asteraceæ. Wormseed.

From Tiflis, Caucasus, Russia. Presented by the director, Jardin Botanique. Received May 22, 1916.

See S. P. I. No. 42682 for previous introduction and description.

42792. ANNONA RETICULATA L. Annonaceæ. Custard-apple.

From Beira, Mozambique, Portuguese East Africa. Seed presented by Mr. E. H. Heron, Director of Agriculture. Received May 13, 1916.

"A robust tree which has spread spontaneously in the forests of the Philippines, the island of Guam, and the East Indies. It is essentially tropical, while the cherimoya, with the smooth-fruited forms of which it has often been confused, is subtropical. Its fruit is inferior in flavor to both the cherimoya and the sugar-apple (*Annona squamosa*), from the first of which it may be distinguished by its long, narrow, glabrate leaves and from the second by its solid, compact fruit, as well as its larger leaves. From *A. glabra*, with which it is also confused, it may be distinguished by its elongate narrow outer petals and its small, dark-brown seeds. It is common in the West Indies and thrives in south Florida." (*Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 294.*)

See S. P. I. Nos. 18736 and 39887 for previous introductions.

42793 to 42798.

From Leyden, Netherlands. Seeds presented by the director, Botanic Garden. Received May 15, 1916.

42793. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

42794. MALUS ASTRACANICA Dum.-Cours. Malaceæ. Apple.

This species is perhaps native of southern Russia and western Siberia. It resembles *Malus pumila* in most fruit characters and in the pubescence of the leaves, but is nearer to *Malus baccata* in the form, serration, and texture of the leaves and in the longer stemmed fruits and leaves.

42795. MALUS sp. Malaceæ. Apple.

Received as *Malus orthocarpa* Lavalle, which appears never to have been published.

42796. PYRUS AMYGDALIFORMIS Vill. Malaceæ. Pear.

A large, rounded shrub or small tree, occasionally 20 feet high. Leaves very variable in shape and size; white flowers 1 inch across appearing in April; fruit orange shaped, about an inch wide, yellowish brown, produced on a short thick stalk. Not especially valuable for the garden except for its picturesqueness when old. Native of the Mediterranean region. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 273.*)

42797. PYRUS NIVALIS Jacq. Malaceæ. Pear.

A small sturdy tree with woolly, white young shoots and young leaves; flowers pure white, 1½ inches across, produced in April in conspicuous clusters. Fruit 1½ inches or more wide, rounded, yellowish green. This eastern European tree is very beautiful early in the season because of its pure white leaves and numerous flowers. In France the trees are cultivated for their fruits, which are eaten when bletted. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 289.*)

42793 to 42798—Continued.

42798. Pyrus sinai Desf. Malaceæ. **Pear.**
(*P. sinaica* Dum.-Cours.)

This pear, which is related to *Pyrus amygdaliformis*, is supposed to have originated in Asia Minor or the islands of the Grecian Archipelago. Its leaves in spring are white with down, becoming smooth and shiny later. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 273.)*

42799. Alpinia exaltata (L. f.) Roem. and Schult. Zinziberaceæ.
(*Renealmia exaltata* L. f.)

Received through Mr. W. E. Safford, of the Bureau of Plant Industry, May 8, 1916.

"A plant belonging to the ginger family, widely spread in tropical America. In Porto Rico it is commonly known as *Bihao*, or *Vijao grande*. The broad thin membranaceous leaves usually acuminate at the apex and tapering at the base, are somewhat like those of a canna. The inflorescence is a long simple raceme, with magenta-colored or reddish purple peduncle and bracts and yellow flowers. The fleshy, obovoid, or oval fruit usually borne on a recurved pedicel (when mature) is black at length and yields a dye of some importance." *(Safford.)*

42800 and 42801. Arachis hypogaea L. Fabaceæ. **Peanut.**

From Tsingtau, China. Presented by Mr. Willys R. Peck, American consul. Received May 18, 1916.

42800. "The large ordinary peanut of trade, grown in Shantung Province. This variety was imported into Shantung within comparatively recent years. The writer recollects that some twenty years ago they were a rarity in the province.". (*Peck.*)

42801. "A small wrinkled sort that, I am informed by an American resident from the Southern States, is found in the southern part of the United States and is known colloquially as *goober*. This variety is indigenous, but has, in its turn, become comparatively rare. None were obtainable in this consular district, these seeds having come from Tsinanfu, 250 miles away." (*Peck.*)

42802. Colocasia esculenta (L.) Schott. Araceæ. **Taro.**

From Chungking, Szechwan Province, China. Tubers presented by Mr. E. Widler. Received May 19, 1916.

"The taro is cultivated in Szechwan in summer wherever a good water supply is available. Each plant produces 7 to 15 egg-shaped tubers; they are cooked whole or sliced and fried in sauce of various kinds. The plant has been known since before the Han period." (*Widler.*)

42803 to 42805.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received May 23, 1916.

42803 to 42805—Continued.

42803 and 42804. CUCURBITA PEPO L. Cucurbitaceæ. **Pumpkin.**

"Seeds of the *Ayote de pelleja* (skin pumpkin) entirely without shell, but solid and good. It is for the temperate and cold highlands of tropical countries only; does not produce fruits in Philadelphia or Florida." (*Wercklé.*)

42805. MEIBOMIA sp. Fabaceæ.

42806. GOSSYPIUM sp. Malvaceæ. **Caravonica cotton.**

From the city of Guatemala, Guatemala. Presented by Mr. S. Billow. Received May 10, 1916.

"During the year 1912 I procured some seed grown from plants near the Pacific Ocean, at an altitude of about 300 feet. When I returned to Guatemala after my last visit to the States, I arranged to put in an experimental plat and planted some of this seed in October, 1913, but owing to many plants not showing the characteristics claimed for Caravonica cotton I exterminated them, only saving those which appeared to possess the true strain. These plants in about eight months gave the first crop, from which I obtained a very good quality of seed. The plants were in a private garden near the city, the altitude being 5,000 feet. I planted about an acre in July, 1915, and last month the plants commenced to have matured bolls, some of the plants having as many as 250 on them. During the time between planting and fruiting we had some very dry as well as cool weather, the thermometer falling to 45° F., and while it apparently retarded the growing of the plants it did not seem to have any effect otherwise." (*Billow.*)

42807. PROSOPIS VIDALIANA Naves. Mimosaceæ. **Aroma.**

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received May 22, 1916.

"Considerable interest and argument has occasionally arisen with regard to the *aroma*, since many people casually acquainted with the Hawaiian prosopis species have insisted that our *aroma* is identical, hence have called it *algaroba*. Mr. Merrill, of the Bureau of Science, upon his return from his recent visit to the United States, secured adequate botanical material of the *Prosopis juliflora* in Honolulu for comparison with our so-called Philippine species. Mr. Merrill maintains that inasmuch as our species has much larger leaves and leaflets and the entire absence of the sweet substance in the pods characteristic of the Hawaiian form, the sinking of the *aroma* into *P. juliflora* is a serious mistake, although practiced by many reputable botanists. Our Mr. H. J. Gallagher, who has had extensive experience both in Hawaii and here in feeding animals, is of the opinion that the *aroma* is of considerable importance as a food for animals, citing his experience in Batangas Province in the southern part of Luzon. During the 11 years we have been observing the *aroma* its spreading has been quite noticeable, but it apparently tends to follow the sandy coast regions, yet does spread slowly up over the hillsides. The objection to the *aroma* is the presence of the long sharp thorns, which are much more pronounced than on the *P. juliflora* in Hawaii. Nevertheless, in Hawaii the thorns apparently vary with individuals, being longer on some trees than on others." (*Edwards.*)

42808. STROBILANTHES FLACCIDIFOLIUS Nees. Acanthaceæ.

From Canton, China. Presented by Mr. P. R. Josselyn, American vice consul in charge. Received May 23, 1916.

"The only dye plant at all extensively grown in Szechwan to-day is *Strobilanthes flaccidifolius* (*tienhua*), which produces an indigo. In certain parts of the Chengtu Plain this is grown in quantity, and the same is true of the district of Mienchou and elsewhere, but its cultivation is on the decline. It is planted on ridges which are kept flooded between. When the plants are about 3 feet tall they are cut down and the leafy shoots placed in concrete pits full of cold water. After steeping for about five days the stems are removed, leaving a green-colored water. Slaked lime is placed in the water to precipitate the indigo. The water is allowed to drain off, and the dye is found deposited at the bottom of the pit." (*E. H. Wilson, A Naturalist in Western China, vol. 2, p. 86, 1914.*)

42809. ALBIZZIA LEBBECK (L.) Benth. Mimosaceæ. Lebbeck tree.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, Gizeh Branch, Ministry of Agriculture. Received May 23, 1916.

"The lebbek of Egypt is a large spreading deciduous tree which grows wild in the forests of India, where it is known as the *siris* tree. Its leaves are composed like those of the honey locust. The greenish yellow flowers are in heads of three or four together, and these are followed by strap-shaped yellowish brown pods 6 to 12 inches long and three-fourths to 1½ inches wide. The trunks of the mature trees are smooth with light-colored bark. The sapwood is white and the heartwood hard, brown mottled with darker longitudinal streaks. The wood seasons and works well and is durable. In many respects the lebbek tree is an ideal one for southern roadsides. It grows rapidly, produces a dense shade, thrives in soils which contain little moisture, and is as easily transplanted and propagated by cuttings as a willow. Large trees can be dug up, severely pruned back, and set out with very little risk of their dying. The crowns and irregular branches of the tree are unsymmetrical enough to relieve that monotony incident to long rows of such trees as the Lombardy poplar so common in Italy and Chile and in Utah, or the cypress so continually met with about north Italian cities. I have not been able to satisfy myself as to the hardiness of the lebbek tree, since such forests as are reported to have occurred in Cairo have been at long intervals. The probabilities are, however, that it will withstand slight frost, and experiments to test its hardiness are worthy of being thoroughly made. It may succeed, therefore, in southern California, Arizona, and Florida, possibly also in Texas and Louisiana." (*D. G. Fairchild, The Lebbek or Siris Tree, Botany Cir. 23, pp. 1–4.*)

42810. FRAGARIA CHILOENSIS (L.) Duchesne. Rosaceæ. Strawberry.

From Chile. Presented by Mr. L. J. Kenna, American consul general, Valparaiso, who secured them from Mr. Robert Christie, Castro, Chile. Received May 26, 1916.

"Strawberry seed from Cucao, west coast of Chiloe Island, Chile, March, 1916." (*Christie.*)

42811. ANNONA CHERIMOLA Mill. Annonaceæ. **Cherimoya.**

From Los Angeles, Calif. Presented by Mr. Charles F. O'Brien. Received June 2, 1916.

"Cuttings from the tree on my ranch at Beverly Hills. Under the stimulus of heavy pruning last year and ample irrigation, the tree this year produced more than 300 pounds of fruit. More than 100 of these fruits weighed from 1 to 2 pounds. We found that this tree comes true to seed, apparently for the reason that there is nothing in the neighborhood with which it can cross. We have some of the young trees now fruiting, and the fruit is apparently identical. This tree originally came from Peru, and I consider this fruit superior to the Mexican variety." (*O'Brien.*)

42812. BERTHOLLETIA NOBILIS Miers. Lecythidaceæ. **Brazil nut.**

From Brazil. Purchased from Hills Brothers Co., New York. Received May 1, 1916.

"We have lately received a letter from our representatives in Para, from which we quote: 'The tree is grown from the ordinary nut pod, which must be planted intact with the eye uninjured, from which, we understand, only one nut germinates. There are no other seeds from which the plant can be grown. The writer has never succeeded in growing a Brazil-nut tree, although he has made many attempts.' This nut is grown on the Amazon River in South America and has become an article of commerce." (*Hills.*)

42813. MAMMEA AMERICANA L. Clusiaceæ. **Mamey.**

From Mompos, Bolivar, Colombia. Seeds presented by Mr. H. M. Curran. Received June 3, 1916.

"Large tree, fruit 4 to 6 inches in diameter, irregular but rounded in form. The two seeds in each fruit separate easily. Rather thin, bright yellow flesh, rather tough, with pleasant slightly acid flavor." (*Curran.*)

For previous introduction, see S. P. I. No. 37814.

42814. NEPHELIUM LAPPACEUM L. Sapindaceæ. **Rambutan.**

From Buitenzorg, Java. Presented by Dr. and Mrs. A. Hagedoon. Received June 3, 1916.

"Seeds of one of the finest *kapoelasans* (hairless *rambutan*). The fruits we took them from were of exceptionally good taste, flesh sweet to the stone, and stone as free as any we saw; fruits very large, dark red." (*Hagedoon.*)

See S. P. I. No. 42384 for fuller description.

42815. SOLANUM BULLATUM Vell. Solanaceæ.

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunnicutt. Received April 10, 1916.

"*Capoeira branco.* Relished by cattle as well as by horses. It seems to have no poisonous effect whatever on the stock eating it." (*Hunnicutt.*)

A South American plant which may possibly be valuable as a forage plant because of its large percentage of protein. Analyses of the leaves and branches show 20 to 28 per cent of protein in the leaves and 14.06 per cent of protein in the branches. (See *Journal of Heredity, vol. 10, p. 185.*)

42816. Gossypium sp. Malvaceæ. Cotton.

From the Canal Zone. Presented by Mr. S. P. Verner, Cristobal. Received June 5, 1916.

"From Arcia, Perez Place, Colon, Panama. It is interesting because it has the habit of opening in the dry season, which all cotton here does not have." (*Verner.*)

"The fiber is fine and of good quality, with a length of 1¼ to 1⅜ inches, and would undoubtedly find a market if produced in sufficient quantity." (*O. F. Cook.*)

42817. Coriaria thymifolia Humb. and Bonpl. Coriariaceæ.

From Ambato, Ecuador. Presented by Prof. Abelardo Panchano, Ambato Agricultural School, through Mr. Frederic W. Goding, American consul general, Guayaquil. Received June 7, 1916.

"This Coriaria is known under the Quichua name *piñan,* but in the northern provinces the plant is talked about as *Shanzhi* or *Zhanzhi.* Its berries are rather poisonous if eaten in some quantity, as I had reason to verify when a boy. The bark and the roots are rich in tannin, as is the case in the *Coriaria myrtifolia* of the European shores of the Mediterranean Sea. The ink obtained from the fruit has a beautiful violet color that changes to black and, within a few hours, to reddish; it has an ancient fame of being indelible, and we believe this ink would be very good if we could, by some means, fix its color. It is said that during the colonial times a Spanish ship sunk, and it was possible to save some papers after they had been under the water because they had been written with *Shanzhi* ink. It is added that there was a king's order to write with this ink all papers of importance." (*Panchano.*)

42818 and 42819. Hibiscus sabdariffa L. Malvaceæ. Roselle.

From Donna, Tex. Presented by Mr. Eltweed Pomeroy. Received June 6, 1916.

42818. "Special bright red, crop of 1915. This blossoms very early and rather high up and may ripen fruit where the regular crop would be cut off by frost. Of course, this is only a supposition which needs proving." (*Pomeroy.*)

42819. "Special dark red, crop of 1915. This blossoms low down and is not very early in blossoming, but it is so protected by the branches that it may escape frost where the fruit borne higher up and more on the outside might be frosted." (*Pomeroy.*)

42820. Begonia sp. Begoniaceæ.

From Rama, Nicaragua. Presented by Mr. Carlos Berger. Received June 7, 1916.

"Seeds of a plant which has some resemblance to *Hydrastis canadensis.* The Indians use the rhizome as a violent emetic in case of snake bite, poisonings, etc., and it acts so strongly that it produces the vomiting of blood in certain doses. The leaves are healing and are used in swellings and skin eruptions. It is curious that the land turtles are crazy for the leaves of this plant, and if there are any of such turtles around, you might be sure to find them near this plant." (*Berger.*)

42821 to 42823.

From Nanking, China. Seed received through Mr. John H. Reisner, at the request of Rev. Joseph Bailie, University of Nanking, May 23, 1916.

42821. ACER BUERGERIANUM Miquel. Aceraceæ. Maple.

"*Yah feng.* We do not know the name of this maple. The tree attains a large size. The seeds were gathered at Ningkwofu, in Anhwei Province, China." (*Reisner.*)

42822. LIQUIDAMBAR FORMOSANA Hance. Hamamelidaceæ.

"*Feng hsiang shu.*"

Tree up to 120 feet in height, having somewhat the appearance of the sweet gum, *Liquidambar styraciflua*, but smaller, usually 3-lobed leaves.

For previous introduction, see S. P. I. No. 34583.

42823. PISTACIA CHINENSIS Bunge. Anacardiaceæ. Pistache.

"*Huang lien shu.*"

A tall, deciduous, diœcious tree, strikingly ornamental, with large pinnate leaves, red when young, changing to vivid green in summer and flaming scarlet and yellow in fall. Berries inedible.

For previous introduction, see S. P. I. No. 40662.

For an illustration of an avenue lined with Chinese pistache trees, see Plate V.

42824. SYNSEPALUM DULCIFICUM (Schum.) Daniell. Sapotaceæ.

(*Sideroxylon dulcificum* A. DC.)

From Aburi, Gold Coast Colony, British West Africa. Presented by Mr. R. H. Bunting, Acting Director of Agriculture. Received May 23, 1916.

"A shrub 6 feet high, with slender, glabrous, brownish branches, with rounded, wedge-shaped leaves 4 to 6 inches long, and axillary clusters of whitish flowers. Native of Upper Guinea." (*Oliver, Flora of Tropical Africa, vol. 3, p. 502, 1877.*)

42825 and 42826.

From Brisbane, Australia. Presented by Mr. J. F. Bailey, director, Botanic Gardens. Received May 25, 1916.

42825. CHLORIS PARAGUAIENSIS Steud. Poaceæ. Grass.

Grasses of this genus are usually perennials often cultivated as ornamentals on account of the attractive inflorescence. Rhodes grass and star-grass are related species.

For previous introduction, see S. P. I. No. 41897.

42826. LYSICARPUS TERNIFOLIUS F. Muell. Myrtaceæ.

"A myrtaceous tree 40 to 50 feet high, with hard, heavy, elastic timber prettily marked, used for cabinetwork, but more particularly for piles, bridges, railway sleepers, etc. The fiber of the bark is of such superior quality that it has been sought for by rope and paper makers." (*Maiden, Useful Native Plants of Australia, pp. 565, 627, 1889.*)

42827 to 42835.

From Asmara, Eritrea, Africa. Seeds presented by the director, Direzione di Colonizzazion. Received May 23, 1916.

42827 to 42835—Continued.

42827. Adansonia digitata L. Bombacaceæ. **Baobab.**

A medium-sized tree, native of central Africa; famous for the great age and enormous size of trunk which it attains. The pulp of the fruit is edible and the juice is used for making a beverage. The bark produces a strong fiber. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 214, 1914.*)

For previous introduction, see S. P. I. No. 33552.

42828. Albizzia amara (Roxb.) Boivin. Mimosaceæ.

A medium-sized, unarmed tree, with densely pubescent branches and small, feathery, compound leaves; closely related to the acacias; native of Abyssinia and western India. (Adapted from *Hooker, Flora of British India, vol. 2, p. 301, 1878.*)

42829. Calpurnia aurea (Lam.) Benth. Fabaceæ.

A tall, leguminous shrub, very rarely treelike, with large, evergreen, compound leaves and showy racemes of yellow flowers, much like Laburnum; appearing in winter. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 637, 1914.*)

42830. Cassia occidentalis L. Cæsalpiniaceæ.

A glabrous, ill-smelling weed, 60 to 90 cm. high, with short, closely crowded, axillary racemes of yellow flowers; of wide distribution in the Tropics and in the warmer temperatures. The seeds, sometimes called *Negro coffee,* are used in some parts of the world as a substitute for coffee and are said to be a febrifuge. The plant has been used as a remedy for stomach trouble, nervous trouble, asthma, and typhoid fever. The root is especially active and the leaves are used medicinally in many countries. (Adapted from *Safford, Useful Plants of Guam, p. 218, 1905.*)

For previous introduction, see S. P. I. No. 38123.

42831. Cassia tora L. Cæsalpiniaceæ.

An annual, glabrous undershrub, with even, pinnate leaves and small yellow flowers in pairs or in short, axillary, few-flowered racemes; of very wide distribution in the Tropics. The leaves are mucilaginous and ill smelling; they are said to be aperient. In India they are fried in castor oil and applied to ulcers. The root rubbed with lime juice is a remedy for ringworms. (Adapted from *Safford, Useful Plants of Guam, p. 219, 1905.*)

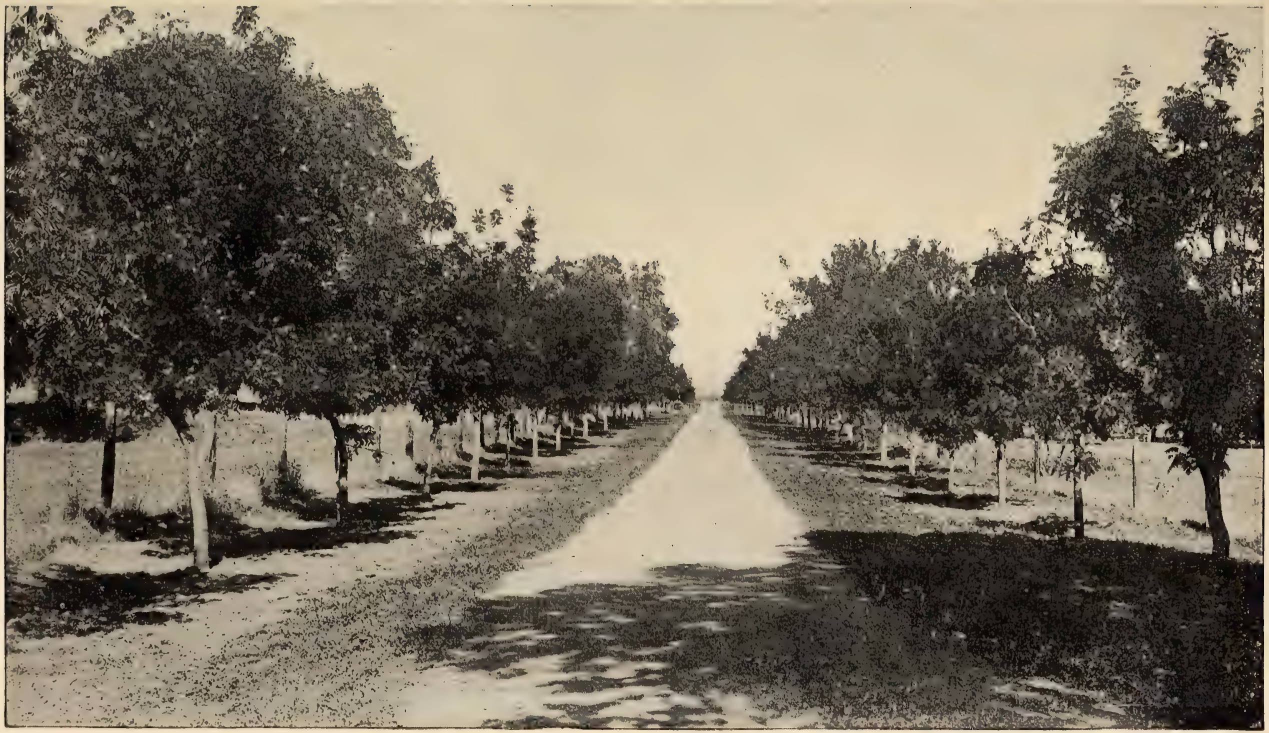
42832. Hibiscus lunarifolius Willd. Malvaceæ.

An undershrub with roundish or sometimes obscurely three to five lobed, long, petiolate leaves; and terminal racemose inflorescences of large yellow flowers 2 to 3 inches across. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 202, 1868.*)

42833. Juniperus procera Hochst. Pinaceæ. **East African cedar.**

A tall conifer, said to be 100 to 150 feet high, with straight trunk; and to yield durable and valuable timber. Native of the high mountains of British East Africa.

For previous introduction, see S. P. I. No. 27505.



AVENUE OF THE CHINESE PISTACHE AT CHICO, CALIF. (PISTACIA CHINENSIS BUNGE, S. P. I. NO. 42823.)

These graceful trees form an avenue leading to the Plant Introduction Field Station at Chico, Calif., and are glorious lines of color in spring with their deep wine-red new foliage, and again in fall with their gorgeous autumn-tinted leaves changing from scarlet to yellow as they mature. These trees live to be centuries old and attain a great size. Their usefulness is not confined to their ornamental value, as the timber is much sought for furniture making in China, and the trees show promise as stocks for the edible pistache nut of commerce (*P. vera*). (Photographed by P. H. Dorsett at Chico, Calif., Oct. 31, 1918; P24761FS.)

42827 to 42835—Continued.

42834. OLEA CHRYSOPHYLLA Lam. Oleaceæ.

A small tree, noteworthy because of the drab or golden color of the under surface of the leaves; flowers small, in axillary panicles; drupe rather large and blackish, globose or somewhat ellipsoidal. Native of tropical Africa. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2333, 1916.*)

42835. OXYTENANTHERA ABYSSINICA (Rich.) Munro. Poaceæ. Bamboo.

A large bamboo, 25 to 50 feet high and 1½ to 3 inches in diameter. Reported to have a wide range in Africa. This species has a very different appearance from the remainder of the genus, but the structure of the spiculæ in all the species is very similar. (For technical description, see Col. Munro's Monograph of the Bambusaceæ, in the Transactions of the Linnean Society, London, vol. 26, p. 127, 1870.)

42836. ANNONA GLABRA L. Annonaceæ. **Pond-apple.**

From Manila, Philippine Islands. Seed presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received May 29, 1916.

Small to medium-sized evergreen tree, sometimes attaining a height of 45 feet; bearing edible fruits the size of a Bellflower apple, with a smooth, leathery skin, green at first, later turning yellow. A swamp-loving tree of the American Tropics, considered of possible value as a stock for other edible-fruited anonas.

42837. GREVILLEA LAURIFOLIA Sieber. Proteaceæ.

From Australia. Presented by Mr. J. H. Maiden, director, Botanic Gardens, Sydney. Received June 5, 1916.

"From Clarence, Blue Mountains, 88 miles west of Sydney, altitude 3,468 feet; seeds collected April 18, 1916." (*Maiden.*)

A procumbent or trailing shrub with nearly oblong, entire leaves, closely silky underneath, and terminal or lateral, rather dense racemes, 1 to 2 inches long. Native of New South Wales. (Adapted from *Bentham, Flora Australiensis, vol. 5, p. 436, 1870.*)

42838. FRAXINUS OXYCARPA Willd. Oleaceæ. **Ash.**

From Kieff, Russia. Seeds presented by Messrs. St. Przedpelski and T. Antoniewicz. Received June 1, 1916.

Similar in its leaves (shape size, and leaflets) to *Fraxinus angustifolia* Vahl., but the leaves are always downy about the midrib. Fruits more tapered at the base. The species has a more eastern natural habitat, reaching to Persia, the Caucasus, and Asia Minor.

42839. OSTERDAMIA MATRELLA (L.) Kuntze. Poaceæ. **Grass.**
(*Zoysia pungens* Willd.)

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received June 6, 1916.

A creeping grass, important for binding coast sands, which does well on alkali soils and also as a lawn grass. Said to be relished by stock.

For previous introduction, see S. P. I. No. 42678.

42840 to 42849. Cucumis melo L. Cucurbitaceæ. **Melon.**

From Petrograd, Russia. Presented by Miss M. I. Kurnakova Danilova, through Mr. Felix Cole, American vice consul, at the request of Dr. C. C. Young, Belen, Tex. Received June 9, 1916. Quoted notes by Miss Danilova.

42840. "Red, soft-fleshed, aromatic, summer melon called *Ananas* (pineapple)."

42841. "Black summer melon called *Urlik*."

42842. "Sweet, aromatic, soft-fleshed winter melon called *Adan*."

42843. "Light green, summer melon called *Aramad*."

42844. "Local *Batrin*, length 27 inches, thickness 3 inches."

42845. "Soft, juicy, summer melon called *Daniar*."

42846. "Mixed summer melons of all kinds."

42847. "Summer melon called *Akurtsi*."

42848. "Sweet, juicy, winter melon."

42849. "The Amir melon, called *Maiskaja*."

42850 to 42853.

From Auckland, New Zealand. Seeds presented by Mr. H. R. Wright. Received June 12, 1916. Quoted notes by Mr. Wright.

42850. Rymandra excelsa Salisb. Proteaceæ. Honeysuckle tree. (*Knightia excelsa* R. Br.)

"New Zealand honeysuckle tree, the wood of which is used for veneering purposes in making furniture. Very pretty in the grain. Its flowers are pretty and at the same time odd, coming out of the side of the branches, instead of out of the terminal, as in most cases. A pretty tree and a useful timber for furniture."

42851. Metrosideros robusta A. Cunn. Myrtaceæ. **Rata.**

"Native name *Rata*. This tree grows to over 100 feet high and 6 feet or more through, a hardwood, very durable; is largely used by wheelwrights. Found all over New Zealand. When in bloom is very gorgeous. *Metrosideros robusta* is only found inland in the forests and not on the coast. It is very difficult to gather seed, owing to the height to which it grows before seeding."

42852. Metrosideros tomentosa A. Rich. Myrtaceæ.

"Native name *Pohutukawa*. This is without doubt one of the most beautiful of flowering trees and is invaluable for bees, the honey from the flowers being of excellent flavor and as white as lard. This tree is to be found skirting the New Zealand coast, on the hillsides, along the sea beach, and even grows out of the sides of the cliffs, overlooking the sea. In many cases you can see trees just above high-water mark, where the roots are frequently washed by the tide and doing well. Like *Metrosideros robusta* it is a hardwood and is used for making knees for boat building; it grows to about 40 feet high. Strange to say, *M. tomentosa* is found in the wild state growing only near the sea, although it grows well inland providing it is protected from frost."

For previous introduction, see S. P. I. No. 34715.

42850 to 42853—Continued.

42853. PITTOSPORUM TENUIFOLIUM Gaertn. Pittosporaceæ.

"Hardy, used for hedges. Seed takes a very long time to germinate, often 12 months."

For previous introduction, see S. P. I. No. 30216.

42854. PHYTOLACCA sp. Phytolaccaceæ. **Ink plant.**

From Kohu Kohu, Hokianga, New Zealand. Presented by Mr. G. J. Clapham. Received June 10, 1916.

"The pheasants and other birds are very fond of the berries and so distribute the seeds over large areas." (*Clapham.*)

42855 to 42857.

From Colombia. Presented by Mr. H. M. Curran. Received June 3, 1916. Quoted notes by Mr. Curran.

42855. BACTRIS sp. Phœnicaceæ. Rattan palm.

"Outer coat of fruit edible. The bright red clusters of fruit are very ornamental; 1,000 feet elevation."

42856. BROWNEA ARIZA Benth. Cæsalpiniaceæ. Ariza.

"Low tree, 20 to 30 feet, in dense forests or along streams or rivers. Very ornamental. Clusters of red flowers borne in profusion; 100 feet elevation."

42857. THEOBROMA PURPUREUM Pittier. Sterculiaceæ. Wild cacao.

"*Cacao del Monte.* Wild cacao from Cauca River valley. Small tree in dense forest. Said to be edible."

42858. PSIDIUM GUAJAVA L. Myrtaceæ. **Guava.**

Grown at the Plant Introduction Field Station, Miami, Fla. Numbered for convenience in recording distribution.

A superior Mexican form with large, pink-fleshed fruits selected at the Miami Field Station. Mr. Simmonds states that these are plants from a tree in the south garden that carried Dr. Webber's guava (No. 1961) budded on seedlings of S. P. I. No. 28134.

42859 and 42860.

From Colombia. Presented by Mr. H. M. Curran. Received June 3, 1916. Quoted notes by Mr. Curran.

42859. BULNESIA ARBOREA (Jacq.) Engl. Zygophyllaceæ.

"*Guayacan tola.* Colombian lignum-vitæ. Small ornamental tree. Showy yellow flowers."

42860. LAWSONIA INERMIS L. Lythraceæ. Henna.

"Ornamental shrub; yellow, very fragrant flowers."

Received as "reseda," a name sometimes applied to this plant in the West Indies. (See *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1830.*)

For previous introduction, see S. P. I. No. 39459.

42861 to 42878.

From Santiago, Chile. Seeds presented by Señor Don Ernesto Palacios, Catholic University. Received June 1, 1916. Descriptions adapted from Castillo and Dey, La Jeografia Botanica del Rio Valdivia, unless otherwise indicated.

42861. ACACIA CAVENIA (Molina) Bertero. Mimosaceæ. **Cavan.**

A small Chilean tree, known as *cavan*, with exceedingly hard wood, durable in moist soil. The spiny plant makes admirable hedges. The tannin from this species is said to be especially valuable for dyeing.

For previous introduction, see S. P. I. No. 33833.

42862. ARGEMONE MEXICANA L. Papaveraceæ. **Mexican poppy.**

42863. BERBERIS sp. Berberidaceæ. **Calafate.**

42864. BUDDLEIA GLOBOSA Hope. Loganiaceæ. **Pañil.**

The *pañil* or *palguin*, a Chilean shrub, better known as *matico*, owes its name *pañil* to the soft fleshy consistency of its leaves which are much used in curing inflammation and are used with good results for washing wounds. Abundant in Valdivia, where it occurs as a shrub, covered in November with yellow flowers, in globose clusters.

42865. CALDCLUVIA PANICULATA (Cav.) Don. Cunoniaceæ. **Tiaca.**

A Chilean tree, known also as *tiaca*, and by the Araucanians as *quiaca*, which is its only name in Chiloe. The diameter of the trunk, which reaches about 15 meters, is only about 40 cm. The chestnutlike leaves in the young specimens are grouped at the end of the branches, giving the tree an ornamental appearance which is increased by its aromatic flowers. Comparable only to the *luma* (*Myrceugenia fernandeziana*) in the elasticity of its wood, which is suited for carriage building.

For previous introduction, see S. P. I. No. 33853.

42866. CANNA sp. Cannaceæ.

42867. CRINODENDRON PATAGUA Molina. Elæocarpaceæ. **Patagua.**
(*Tricuspidaria dependens* Ruiz. and Pav.)

This Chilean shrub is called *chequehue* by the natives, and grows best on river banks. It hardly reaches a height of 3 meters, and has beautiful foliage of lanceolate leaves, which appear in spring, and red flowers.

For previous introduction, see S. P. I. No. 33950.

42868. DAUCUS CAROTA L. Apiaceæ. **Carrot.**

42869. DRIMYS WINTERI Forst. Magnoliaceæ. **Canelo.**

A handsome evergreen shrub, rather tender; young shoots smooth, often tinged with red. Leaves lanceolate, 5 to 10 inches long, bright rather pale green, very aromatic when crushed. Flowers borne in a cluster of loose umbels, from four to seven in each umbel; they are ivory white, fragrant, and about 1¼ inches across. Native of South America from Tierra del Fuego to north of the Equator. Known since 1578, in which year its bitter aromatic bark was brought home by Capt. Winter (after whom it is named) in one of Drake's ships from the Magellan Straits. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 502.*)

For previous introduction, see S. P. I. No. 35986.

42861 to 42878—Continued.

42870. ESCALLONIA REVOLUTA (Ruiz and Pav.) Pers. Escalloniaceæ.

Frequently called *siete camisas* (seven-bark) in Valdivia. It is rare in the central valley of Chile, but frequent in the mountains of Santiago. In Valdivia it grows in moist soils and rarely reaches 5 meters in height, sending out branches from the base of its thin trunk. Its light white wood is used only for firewood.

For previous introduction, see S. P. I. No. 34405.

42871. FAGELIA sp. Scrophulariaceæ.
(*Calceolaria* sp.)

42872. KAGENECKIA OBLONGA Ruiz and Pav. Rosaceæ. Bolen.

A Chilean tree which grows in arid places throughout the country. Its leaves are used for treating intermittent fever, and it is also employed at a tonic.

For previous introduction, see S. P. I. No. 34400.

42873. LAGENARIA VULGARIS Seringe. Cucurbitaceæ. Gourd.

42874. MAYTENUS BOARIA Molina. Celastraceæ. Maiten.

This Chilean tree, known as *huirpo* to the Araucanians, attains 12 meters in height, with a slender trunk. It is undoubtedly the most beautiful native tree in its foliage, which trembles and waves in the slightest breeze. Its leaves, which have a great forage value, are most eagerly sought by hungry cattle, like those of the weeping willow. Its wood is often yellow and is hard and elastic. There are varieties the wood of which is finely streaked with red and olive.

For previous introduction, see S. P. I. No. 34621.

42875. PERSEA LINGUE (Ruiz and Pav.) Nees. Lauraceæ. Lingue.

This is a very valuable industrial forest tree of large size, handsome, compact, evergreen, has glossy gray-blue-green leaves, and is an extra quick grower; here it is not a delicate plant, but grows quickly in any soil that is wet or very moist, also in water. The wood is light and tough like elm, but takes a very high finish. Its lumber is highly esteemed and is lasting if protected from the wet; it is used for furniture, bodies and poles of carts, ox yokes, etc. The wood is the color of white ash, finishes with a yellowish tinge, takes any stain. Its bark is used solely for tanning and is largely exported to Europe. Every station south is filled to overflowing with thousands of bags of broken bark awaiting transportation. The forests are being stripped, and in a very few years this tree will be very scarce. It is an extra beautiful shade tree. Its leaves are poisonous to animals, especially sheep, which are very fond of them. Medicinally it is a powerful astringent.

See S. P. I. Nos. 3393 and 24208 for previous introductions.

42876. PSORALEA GLANDULOSA L. Fabaceæ. Culen.

A medicinal plant, which grows along the river banks, and reaches a uniform height throughout Chile of 2 to 5 meters. Its leaves are used in the preparation of aloja (a popular beverage).

42877. QUILLAJA SAPONARIA Molina. Rosaceæ. Quillay.

"The *quillay* or *cullay* of the Chileans is a tree from 50 to 60 feet high, with smooth, shining, short-stalked, oval leaves and usually terminal white flowers, either solitary or from three to five upon a stalk. Its bark, called *quillay* or soap-bark, is rough and dark colored ex-

42861 to 42878—Continued.

ternally, but internally consists of numerous regular whitish or yellowish layers and contains a large quantity of carbonate of lime and other mineral matters. It is also rich in saponin, a vegetable soap principle found likewise in plants belonging to the cloverworts, soapworts, and a few other orders; and on this account it is commonly used as a substitute for washing clothes, 2 ounces of the bark being sufficient to wash a dress. It is also said to remove all spots or stains and to impart a remarkable luster to wool; and is used to wash the hair, for which purpose it is powdered between stones, then rubbed with the hands in water, making a foam like soap. A preparation of it has been brought into use in this country for promoting the growth of the hair." (*Lindley, Treasury of Botany, vol. 2, p. 952.*)

See S. P. I. No. 3360 for previous introduction.

42878. SCHINUS HUIGAN Molina. Anacardiaceæ. **Huigan.**
(*S. dependens* Orteg.)

This characteristic spiny shrub of the arid hills in Chile has fragrant leaves and hard resistant wood, which is much used whenever the size of development permits. The seeds are scattered by the breaking of the epidermis of the fruit. It makes an excellent hedge plant.

For previous introduction, see S. P. I. No. 33823.

42879. HIBISCADELPHUS GIFFARDIANUS Rock. Malvaceæ.
Hau Kuahiwi.

From Honolulu, Hawaii. Presented by Mr. J. F. Rock, botanist, College of Hawaii. Received June 5, 1916.

"You may know that of this species there is only one tree in existence and consequently seed is very scarce. I have a number of young trees growing in Honolulu and thus hope to perpetuate the species." (*Rock.*)

"The *Hau Kuahiwi* is a remarkable tree. At first appearance one would think it to be the common Hau (*Hibiscus tiliaceus*), but at closer inspection one can not but wonder at the most peculiar shape of the flowers, which are of a deep magenta, and the large yellowish tuberculate capsules. It is rather a low tree with a not-erect, but rather inclining, trunk of a foot in diameter, with a many-branching round crown. The genus Hibiscadelphus, meaning brother of Hibiscus, was described by the author and the species named in honor of Mr. W. M. Giffard, of Honolulu, in whose company the writer collected his first specimens. It differs from the genus Hibiscus in its very peculiar flowers and mainly in the calyx, which is not persistent with the capsules, but drops together with the bracts as soon as the capsules are formed. Unfortunately, the tree is the only one in existence. It is unique among all Hawaiian plants, and the author is sorry to relate that nothing has been done to protect it. Like many other Hawaiian trees, it will succumb to the ravages of cattle, which inhabit a great many of our native forests. This single tree is found on a small kipuka of 56 acres called Puaulu, on the land of Keauhou, near Kilauea Volcano, at an elevation of 4,200 feet, on the island of Hawaii. It is surrounded by a great many rare trees, which will share its fate sooner or later. Among them are beautiful trees of *Sapindus saponaria*, Pelea, Zanthoxylum, Urera, Straussia, Ochrosia, etc. The genus consists of three species, the above described one in Hawaii, one on Maui with only a single tree left, and a third on Hualalai, Hawaii." (*J. F. Rock, Indigenous Trees of the Hawaiian Islands, p. 299.*)

42880 to 42887.

From Tokyo, Japan. Presented by Dr. H. Terao, botanist, Imperial Agricultural Experiment Station. Received May 31, 1916.

42880 to 42884. ORYZA SATIVA L. Poaceæ. Rice.

42885 to 42887. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.
(*Glycine hispida* Maxim.)

42888 to 42891. HORDEUM spp. Poaceæ. **Barley.**

From Khartum, Sudan Government. Presented by Mr. E. R. Sawyer, Central Research Farm. Received June 13, 1916. Notes by Mr. Sawyer.

42888. HORDEUM VULGARE COELESTE L.

"Abyssinian barley or barley wheat. Cultivated in parts of India as a true hull-less barley."

42889. HORDEUM VULGARE COELESTE L.

"*Saggia.* Abyssinian barley."

42890. HORDEUM VULGARE PALLIDUM Seringe.

"*Sagia* or *Sagina* barley grown under water-wheel irrigation."

42891. HORDEUM VULGARE PALLIDUM Seringe.

"The ordinary Egyptian barley as cultivated on the larger estates."

42892 to 42894. CICER ARIETINUM L. Fabaceæ. **Chick-pea.**

From Pusa, India. Presented by Mr. Bernard Coventry, Agricultural Advisor to the Government of India. Received June 13, 1916.

For a full discussion of these varieties and their behavior, see "Some Varieties of Indian Gram," by Albert and Gabrielle L. C. Howard, Memoirs of the Department of Agriculture of India, vol. 7, No. 6, December, 1915, pp. 231–232, from which the following quoted notes have been taken:

42892. "Type 9. Very late, habit very spreading, with numerous side branches. Leaves very dark green. Flowers white. Seeds white with a yellowish tinge. This type is of interest in that in spite of its deep root system, which is a disadvantage at Pusa, it has so far given the highest monetary return per acre. In this form yield and quality are united in the same type."

42893. "Type 17. Late, habit slightly spreading. Leaves with a yellowish tinge and slight redness on the apices of the teeth of the leaflets, midrib reddish. Flowers pink; standard slightly pink; wings violet. Seeds yellowish brown."

42894. "Type 18. Intermediate in time of maturity, habit erect. Leaves light green with a yellowish tinge, slight reddening on the margins of the leaflets, and deeper reddening on the midrib. Flowers pink; standard light pink; wings violet. Seeds dark brown."

42895. CACTUS sp. Cactaceæ. **Cactus.**

From Santa Marta, Colombia. Plants collected by Mr. H. M. Curran. Received June 24, 1916.

42896. XIMENIA AMERICANA L. Olacaceæ. **False sandalwood.**

From Donga, Northern Nigeria. Presented by Rev. C. L. Whitman, Sudan United Mission. Received June 17, 1916.

42896—Continued.

"Seeds of what might be called an apricot plum. A fruit the size of a small plum growing on a plumlike tree, but having considerable of an apricot flavor." (*Whitman.*)

42897 to 42901. ANNONA CHERIMOLA Mill. Annonaceæ. **Cherimoya.**

From San Francisco de Limache, Chile. Plants presented by Sr. Adolfo Eastman. Received May 6, 1916. Quoted notes by Mr. Eastman.

"These are grafted varieties and are already in flower, so that at least next season they will bear."

42897. "*Concha*, meaning shell. The skin resembles tortoise shell."

42898. "*Copucha*, meaning bladder. Has a very smooth skin."

42899. "*Piña*, meaning pineapple. Has the appearance of the pineapple."

42900. "*Sandia*, meaning watermelon. Called so because of its size, like a watermelon."

42901. (No label.)

42902. AMHERSTIA NOBILIS Wall. Cæsalpiniaceæ.

From Sibpur, near Calcutta, India. Presented by the curator of the Royal Botanic Garden, at the request of Mr. Bernard Coventry, Agricultural Adviser of the Government of India, Pusa. Received June 20, 1916.

"Named in honor of Lady Amherst. A medium-sized tree, native of Burma, and considered the most beautiful of all flowering trees. Its immense candelabrumlike sprays of red and yellow flowers, drooping from every branch among the handsome foliage, present an appearance of astonishing elegance and loveliness. It is in flower during the greater part of the year, but its chief flowering season in Ceylon is from January to April, i. e., the dry season. The tree thrives in the moist low country up to 1,600 feet and requires rich and well-drained soil. It does not seem to flourish near the sea, and is rarely met with about Colombo. It produces seed very scantily anywhere, a pod or two occasionally being all that can be obtained, and even these are often infertile. Propagation by layering has therefore to be adopted. Introduced into Ceylon in 1860." (*Macmillan, Handbook of Tropical Gardening and Planting, p. 291.*)

42903 and 42904. STRYCHNOS spp. Loganiaceæ.

From Beira, Mozambique, Portuguese East Africa. Presented by Mr. E. H. Heron, Director of Agriculture. Received June 19, 1916.

42903. STRYCHNOS SPINOSA Lam.

"Vernacular name, *M'Tamba.*"

A small tree up to 10 feet high found throughout tropical Africa, in Madagascar, and the Seychelles. This tree is interesting because of its hard-shelled, orangelike fruit, 2 to 3 inches in diameter, with an acid pulp which is wholesome and agreeable, with a clovelike aroma very noticeable when ripe. The seeds contain no alkaloids. This plant has produced fruit in Florida, where it seems to do well.

For previous introduction, see S. P. I. No. 42596.

42904. STRYCHNOS GERRARDI N. E. Brown.

"Vernacular name, *M'Quaqua.*"

An East African species from Natal and Portuguese East Africa.

For previous introduction, see S. P. I. No. 34161.

42905 to 42966. TRITICUM AESTIVUM L. Poaceæ. Wheat.

(*T. vulgare* Vill.)

From Pusa, India. Presented by Mr. A. Howard, Imperial Economic Botanist for India. Received May 27, 1916.

42905. *Bihar* No. 37.
42906. *Bihar* No. 38.
42907. *Bihar* No. 39.
42908. *Bihar* No. 40.
42909. *Bihar* No. 41.
42910. *Bihar* No. 42.
42911. *Bihar* No. 43.
42912. *Bihar* No. 44.
42913. *Bihar* No. 45.
42914. *Bihar* No. 46.
42915. *Bihar* No. 47.
42916. *Bihar* No. 48.
42917. *Bihar* No. 49.
42918. *Bihar* No. 50.
42919. *Bihar* No. 51.
42920. *Bihar* No. 52.
42921. *Bihar* No. 53.
42922. *Bihar* No. 54.
42923. *Bihar* No. 55.
42924. *Bihar* No. 56.
42925. *Bihar* No. 57.
42926. *Bihar* No. 58.
42927. *Bihar* No. 59.
42928. *Bihar* No. 60.
42929. *Bihar* No. 61.
42930. *Bihar* No. 62.
42931. *Bihar* No. 63.
42932. *Bihar* No. 64.
42933. *Bihar* No. 65.
42934. *Bihar* No. 66.
42935. *Bihar* No. 98.
42936. *Bihar* No. 99.
42937. *Bihar* No. 100.
42938. *Bihar* No. 101.
42939. *Bihar* No. 102.
42940. *Bihar* No. 103.
42941. *Bihar* No. 104.
42942. *Bihar* No. 105.
42943. *Bihar* No. 106.
42944. *Pusa* No. 106.
42945. *Bihar* No. 107.
42946. *Bihar* No. 108.
42947. *Bihar* No. 109.
42948. *Bihar* No. 110.
42949. *Bihar* No. 111.
42950. *Bihar* No. 112.
42951. *Bihar* No. 113.
42952. *Bihar* No. 114.
42953. *Bihar* No. 115.
42954. *Bihar* No. 116.
42955. *Bihar* No. 117.
42956. *Bihar* No. 118.
42957. *Bihar* No. 119.
42958. *Bihar* No. 120.
42959. *Bihar* No. 121.
42960. *Bihar* No. 123.
42961. *Bihar* No. 124.
42962. *Bihar* No. 125.
42963. *Bihar* No. 126.
42964. *Bihar* No. 127.
42965. *Bihar* No. 128.
42966. *Bihar* No. 130.

42967. TRIPSACUM LAXUM Nash. Poaceæ. Grass.

From the city of Guatemala, Guatemala. Plants presented by Mr. Juan J. Rodriguez, through Mr. Stuart K. Lupton, American consul, at the request of Mr. H. Pittier, of the Department of Agriculture. Received June 21, 1916.

42968. CARICA PAPAYA L. Papayaceæ. Papaya.

From Donga, Northern Nigeria. Presented by Rev. C. L. Whitman, Sudan United Mission, through Rev. C. W. Guinter, Kratzerville, Pa. Received June 22, 1916.

"In from 12 to 18 months in this climate this grows into a tree 10 to 20 feet high. The fruit ripens here from November to January, and is quite edible. I trust you may be successful in growing it, though this may be doubtful because of the danger of frost in most parts of the States." (*Whitman.*)

42969. Bursera sp. Balsameaceæ.

From El Banco, Colombia. Presented by Mr. H. M. Curran. Received June 21, 1916.

"*Madura Platano.* Large ornamental timber tree. Juana Sanches, El Banco, May 15, 1916." (*Curran.*)

42970. Cucurbita ficifolia Bouche. Cucurbitaceæ. **Alcallota.**

From Santa Ines, Chile. Presented by Mr. Walter Fischer, of the Bureau of Commerce, who secured them from Sr. Salvador Izquierdo, Santiago, Chile. Received June 27, 1916.

"Seeds of a pumpkin called *alcallota* obtained May 5, 1916, at the nursery and cannery of Salvador Izquierdo near Nos, about 12 miles south of Santiago, Chile. The fruit of this particular variety is of a creamy-white color, smooth, somewhat oblong in form, of about 7 or 8 pounds' weight, and with quite hard durable rind; evidently a good keeper, at least in that climate, as shown by the good preservation of the fruit, then just a year old, from which the seeds were extracted. This pumpkin is much used in Mr. Izquierdo's cannery for marmalades, the fibrous inside being made into a very sweet preparation, which does not lose its stringy character and which is termed *dulce de alcallota*, and the rind is cooked into a soft creamy paste labeled *crema de alcallota.* Both preparations are very tasty, with a sweet-potato flavor especially noticeable in the cream." (*Fischer.*)

For previous introduction, see S. P. I. No. 36328.

42971 and 42972.

From Dehra Dun, United Provinces, India. Presented by Mr. Thomas Tracy. Received June 15, 1916. Notes by Mr. Tracy.

42971. Beaumontia grandiflora (Roth) Wall. Apocynaceæ.

"A mammoth creeper that has run up to the top of the cotton tree [S. P. I. No. 42972]. The blossoms are formed in a cluster; pure white and fragrant; corolla deep and unbroken. The corolla is about 2 inches deep, with an undulating border."

For previous introduction, see S. P. I. No. 33560.

42972. Bombax malabaricum DC. Bombacaceæ. **Cotton tree.**

"Seeds from the cotton tree in front of our house. I think the tree is from Africa. It is very large."

For previous introduction, see S. P. I. No. 40603.

42973 to 42982.

From Jamaica Plain, Mass. Cuttings presented by Prof. C. S. Sargent, Arnold Arboretum. Received June 30, 1916.

42973. Berberis sargentiana C. Schneid. Berberidaceæ. **Barberry.**

A black-berried barberry from western Hupeh, China, reaching a height of 2 meters. It is the only evergreen barberry which has proved entirely hardy at the Arnold Arboretum, and for this reason is one of the most desirable of the recent introductions as a garden plant. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 359, 1913.*)

42974 to 42982. Rosa spp. Rosaceæ. **Rose.**

42974. Rosa banksiopsis Baker.

A very common rose in western Hupeh in thickets of low-growing shrubs on mountain slopes at altitudes of 1,300 to 2,000 meters. It

42973 to 42982—Continued.

grows to a height of 3 meters, has rose-red flowers, coral-red fruits, and more or less reddish purple shoots and branches remarkably free from prickles. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 322, 1915.*)

42975. ROSA BELLA Rehd. and Wils.

This pretty rose from the mountains in northwestern Shansi seems most closely related to *Rosa moyesii* Hemsley and Wilson, which is a much more vigorous plant with stout prickles, larger usually more acute leaflets pubescent beneath, at least on the midrib, globose ovoid flower buds abruptly contracted at the apex, larger flowers, and pinnate sepals. It may also be compared with *R. sweginzowii* Koehne, which differs chiefly in its stouter, much-flattened prickles, the usually double serrate leaflets more or less pubescent beneath, in the globose-ovoid flower buds, and in the pinnate sepals. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 342, 1915.*)

42976. ROSA CAUDATA Baker.

"This is a rose discovered by Wilson in western China. It is one of the *Cinnamomæ* section of the genus, and is a tall vigorous shrub with stout arching stems covered not very thickly with stout spines, dark-green foliage, and flowers about 2 inches in diameter, in wide, sometimes 25-flowered clusters. The beauty of the flowers is increased by the white markings at the base of the pure pink petals. The fruit is orange-red, an inch long, gradually contracted above into a narrow neck crowned by the much-enlarged calyx lobes. This handsome rose is flowering now for the third year in the arboretum; it is perfectly hardy and an excellent addition to the roses of its class." (*Arnold Arboretum Bulletin of Popular Information, new ser., vol. 1, p. 42.*)

42977. ROSA CORYMBULOSA Rolfe.

"A distinct new species with unarmed or sparingly prickly branches and numerous small flowers in corymblike inflorescences. Flowers three-fourths to 1 inch across. Petals broadly obcordate, deep rose above, white at the base. Fruits globose, glandular, about one-third of an inch long, crowned by the persistent sepals. Central China." (*Kew Bulletin of Miscellaneous Information, New Garden Plants of the Year 1915, p. 80.*)

42978. ROSA DAVIDI Crép.

An orange-fruited, pink-flowered rose from western Szechwan, China, reaching a height of 5 meters at altitudes of 1,600 to 3,000 meters. It is the species nearest, in China, to *Rosa macrophylla* Lindley of the western Himalayas. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 322, 1915.*)

42979. ROSA HELENAE Rehd. and Wils.

"From the seeds of a rose collected by Wilson in western China; a new species of the *Moschata* group has been raised. It is now flowering in the arboretum for the third year, and is a vigorous and perfectly hardy shrub, 5 or 6 feet tall, with slender, arching stems furnished sparingly with short red spines, light-green cheerful

42973 to 42982—Continued.

foliage, and terminal and axillary many-flowered clusters of pure white, delicately fragrant flowers 1½ inches in diameter and borne on short, erect branchlets. It is a plant which will be prized by persons who realize that among the wild roses are some of the most beautiful of all flowering plants and who find a place for them in their gardens." (*Arnold Arboretum Bulletin of Popular Information, new ser., vol. 1, p. 39, 1915.*)

42980. ROSA JACKII Rehder.

"This beautiful rose was introduced into the arboretum from Korea several years ago by Mr. Jack, and when it flowered was named for him. At about the same time it was named in England *Rosa bakeri* and *R. kelleri*, names which can not be used for it, however, as they had previously been given to other roses. It is one of the *Multiflora* roses with long stems which lie flat on the ground, lustrous foliage, and pure white flowers 2 inches or more in diameter, in wide many-flowered clusters. The flowers are larger than those of the Japanese *R. multiflora*, and it blooms much later than that species. This rose is perfectly hardy and a first-rate garden plant. The hybridizer ought to be able to find in it a good subject from which to raise a race of hardy, late-flowering rambler roses." (*Arnold Arboretum Bulletin of Popular Information, new ser., vol. 1, p. 43, 1915.*)

42981. ROSA MULTIFLORA CATHAYENSIS Rehd. and Wils.

"*Rosa multiflora*, var. *cathayensis;* it is a hardy, vigorous, and handsome plant with the habit of the Japanese *R. multiflora*. The flowers are from 2 to 2½ inches in diameter and are produced in large, many-flowered clusters, and the large, conspicuous, bright-yellow anthers add to the beauty of the clear pink petals. This rose may well become a popular garden plant. It offers possibilities which the hybridist will undoubtedly take advantage of; and it is of considerable historical interest as the wild original of garden plants cultivated probably for centuries by the Chinese and known in Europe and America for more than a hundred years." (*Arnold Arboretum Bulletin of Popular Information, new ser., vol. 1, p. 35, 1915.*)

42982. ROSA SWEGINZOWII Koehne.

A rose from western Szechwan, with deep rose-colored flowers, growing to a height of 5 meters, at altitudes of 2,300 to 3,600 meters. The shoots are thickly covered with short, stout, flattened prickles. (Adapted from *Plantae Wilsonianae, vol. 2, p. 324, 1915.*)

42983 to 42985. ANANAS SATIVUS Schult. f. Bromeliaceæ.
Pineapple.

From Brisbane, Australia. Plants presented by Mr. J. F. Bailey, director, Botanic Gardens. Received June 28, 1916.

42983. "*Cayenne Queen*, smooth leaf."

42984. "*Ripley Queen*, rough leaf."

42985. "*McGregor*. A variety raised by Mr. E. Smallman, of Ormiston, and named in honor of our immediate past governor, Sir William McGregor." (*Bailey.*)

42986 to 43010.

From Colombia. Seeds collected by Mr. H. M. Curran. Received June 20, 1916. Quoted notes by Mr. Curran.

42986. ACHRAS ZAPOTA L. Sapotaceæ. Sapodilla.
(*A. sapota* L.)

"Good quality and early. White or greenish flesh. (Margarita, Mompos, Colombia, May 20, 1916.)"

For previous introduction, see S. P. I. No. 38859.

42987. ANACARDIUM EXCELSUM (Bert. and Balb.) Skeels. Anacardiaceæ.
(*A. rhinocarpus* DC.)

"*Caracoli.* Large ornamental timber tree. (Margarita, Mompos, Colombia.)"

For previous introduction, see S. P. I. No. 40987.

42988. ANNONA MARCGRAVII Mart. Annonaceæ. Guayabana.

"*Guayabana del monte.* Wild anona. Tree in second-growth forest. Edible fruit, 6 inches in diameter. Greenish white fruit, slightly acid. (El Banco, Colombia.)"

42989. BRITOA ACIDA (Mart.) Berg. Myrtaceæ. Guayabo.

"*Guayabo.* Tree 20 to 30 feet. Large yellow fruit, few seeds, acid, 3 inches in diameter, white flesh. (Papayal, El Banco, Colombia, May 20, 1916.)"

For previous introduction, see S. P. I. No. 42725.

42990. CARICA PAPAYA L. Papayaceæ. Papaya.

"Large-fruited papaya. (Margarita, Mompos, Colombia, May 16, 1916.)"

42991. LICANIA PLATYPUS (Hemsl.) Fritsch. Rosaceæ. Chupa.

"*Chupa.* Large fruits, with smooth brown or greenish coat. Soft, yellow, rather dry flesh. Fruit 4 to 6 inches long, 2 to 3 inches in diameter. Tree 40 to 60 feet. Said to bear at all seasons. (Papayal, El Banco, Colombia, May 20, 1916.)"

For previous introduction, see S. P. I. No. 41485.

42992 to 42996. MANGIFERA INDICA L. Anacardiaceæ. Mango.

"From Papayal, El Banco, Colombia, May 20, 1916."

42992. "*Mango Hobo.* Very large, very yellow, good flavor."

42993. "*Mango Liso.* Large, one of the earliest, ripe March to April. Good flavor."

42994. "*Mango Chupa.* Large red."

42995. "*Mango Masa.* Yellow with dark lines."

42996. "*Mango Lechoso.* Commonest and best flavored of mangos in this region. Very large crop this year. Fruit medium sized, yellow, very much fiber."

42997. CITRUS sp. Rutaceæ. Orange.

"Seeds of a large orange; fair flavor, sweet. (Margarita, Mompos, Colombia, May 15, 1916.)"

42998. ANNONA MARCGRAVII Mart. Annonaceæ. Guayabana.

"Wild form of this plant in the second-growth forests along the Magdalena River, possibly escaped from cultivation, as most of this region has been cleared during the last 300 years, and grows up into

42986 to 43010—Continued.

the forests. Fruits are 4 or 6 inches in diameter, heart shaped, and a greenish white color; not of unpleasant flavor, but rather dry as compared with the ordinary cultivated forms."

For previous introduction, see S. P. I. No. 42988.

42999. Bactris sp. Phœnicaceæ. **Palm.**

"From Tierras de Loba, Bolivar, Colombia."

43000. Chrysobalanus icaco L. Rosaceæ. **Icaco.**

"A shrub from 4 to 8 feet in height, much branched. Planted more as an ornamental about the houses than for fruit. Fruits white with a pinkish bloom, rather dry and insipid; about the size of a wild plum."

For previous introduction, see S. P. I. No. 33791.

43001. Elaeis melanococca Gaertn. Phœnicaceæ. **Palm.**

"*Palma corozo.* Palm with practically no stems, leaves borne from within 2 to 3 feet from the ground, 8 to 10 feet long. Fruits borne in dense heads, a great part of them included among the bases of the leaves. Fruits compressed and irregular, orange-red in color when ripe. Two classes of oil are obtained, red oil from the coating of the seeds and a clear oil from the kernels. The latter is very much prized as a cooking oil. The palm is common in the lowlands among the flooded areas. This palm is often found growing under conditions similar to those of our flooded bottom lands along the Mississippi or the Gulf coast rivers."

For previous introduction, see S. P. I. No. 40303.

43002. Cereus sp. Cactaceæ. **Cactus.**

"The plants reach a size of from 12 to 20 feet high. Fruits edible, about the size of an egg, red, and of a pleasant flavor. Common plant of the hills above the Bay Santa Marta."

43003 to 43006. Gossypium sp. Malvaceæ. **Cotton.**

"Growing together on a small plantation. Strong healthy plants full of flowers and fruits at the time of collection, June, 1915."

43003. "*Peruvian* cotton."

43004. "*Bogota* cotton."

43005. "*Antioquia* cotton."

43006. (Colombian.)

43007. Momordica zeylanica Mill. Cucurbitaceæ. **Balsam-apple.**

"The Chinese gardeners about the American cities grow this plant under the name of la-kwa, for the edible pulpy arils surrounding the seeds, also for the edible fruit itself (which is prepared, usually by boiling, before it is ripe). The rind is sometimes dried and used in medicinal preparations. The odd seeds cause it to be called the 'art pumpkin' by some persons." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2060.*)

For previous introduction, see S. P. I. No. 28284.

43008. Salix chilensis Molina. Salicaceæ. **Willow.**
(*S. humboldtiana* Willd.)

"Common willow from the Magdalena River region; size about 20 feet in height, 5 to 6 inches in diameter. It has no commercial use, but it will probably be useful for basket work. It is probably *Salix humboldtiana.*"

For previous introduction, see S. P. I. No. 28709.

42986 to 43010—Continued.

43009. SAPINDUS SAPONARIA L. Sapindaceæ. Soapberry.

"Common tree of the Magdalena River region; size 50 to 60 feet, and the diameter is 18 to 24 inches. Fruits are not commonly used in this region. An ornamental and useful timber tree."

For previous introduction, see S. P. I. No. 42728.

43010. SESAMUM ORIENTALE L. Pedaliaceæ. Sesame.
(*S. indicum* L.)

"*Honholi.* A low annual herb from 2 to 3 feet in height. Seeds used for making sweetmeats. Commonly cultivated in low negro clearings."

For previous introduction, see S. P. I. No. 36896.

43011. OSTERDAMIA MATRELLA (L.) Kuntze. Poaceæ. **Grass.**
(*Zoysia pungens* Willd.)

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Received May 10, 1916.

A creeping grass, important in binding coast sands, which does well on alkali soils and also as a lawn grass. Said to be relished by stock.

See S. P. I. No. 34657 for previous introduction.

43012. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Cochabamba, Bolivia. Presented by Mr. Johnson Turnbull. Received June 27, 1916.

"These stones are remarkably small for peach stones, some of them being only half an inch long and one-fourth of an inch thick, while the largest does not exceed three-fourths of an inch in length. The surface is rather smooth, the inequalities consisting mostly of pits instead of grooves, and they are sharp pointed at the apex. The fruit is evidently a cling, and from the amount of flesh adhering, there was evidently a fair proportion of flesh to the size of the stones. Cochabamba is about latitude 17° 20′ S., and the altitude is about 8,000 feet." (*W. F. Wight.*)

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Issued July 20, 1921.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED
BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1916.

(No. 48; Nos. 43013 TO 43390.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1916 (NO. 48; NOS. 43013 TO 43390).

INTRODUCTORY STATEMENT.

This inventory represents a period of great unrest and lists but few introductions by agricultural explorers who were in foreign countries. It covers a period when shipping facilities were more unsettled than they had been at any time from the outbreak of the war up to the time of America's entrance into it. In consequence it is one of the smallest inventories that have been issued for years.

Notwithstanding these handicaps, some important introductions are described in it; and these it may be well to emphasize.

The growing realization among manufacturers of the importance of the discovery of the hydrogenation of vegetable oils is rapidly putting the palm oils, nut oils, and all other oils in quite a new category. As one chemist has expressed it: "Since these discoveries, which have made it possible to transmute, so to speak, vegetable oils into all sorts of substances useful to man, the oil industries are coming to be understood as of greater importance to the human race than the great steel and iron industries."

It is therefore from this new point of view of the importance of vegetable oils that the successful cultivation of the Brazil nut (No. 43114) in Ceylon and the Straits Settlements is worth recording and action upon the problem of its forest planting in Porto Rico urged. The Java almond, *Canarium indicum* (No. 43024), not only one of the stateliest avenue trees in Java, but also a tree yielding an abundance of large-kerneled nuts, the oil from which has been successfully used by the Dutch in emulsions as an infant food, is worthy of study. The soft lumbang of the Philippines, *Aleurites trisperma* (No. 43389), which yields a quicker drying oil than the true lumbang, *A. moluccana*, may prove adapted to culture in Porto Rico or Cuba; and its introduction brings up the whole question of the hybridization of the various species of Aleurites, the members of which genus yield such closely allied but specific products. There are no records of any work of selection or hybridization having yet been done with these rapid-growing trees. The remarkable results which have been obtained by physicians in the treatment of leprosy with chaulmoogra oil and the isolation of the effective principle of this oil by Dr. Power have made it seem important to introduce and acclimatize in our tropical possessions the invaluable tree, *Hydnocarpus kurzii* (No. 43227). Whether the amounts of oil yielded by the fevillea (No. 43213), a forest climber of Jamaica, will warrant its cultivation is a question.

Useful hardy palms are so few in number that the testing out of two little-known ones from Argentina, by Dr. H. Nehrling, at his remarkable place at Gotha, Fla., is a matter of particular interest. These palms would seem to be adapted to a wide range of territory throughout northern Florida, since they were quite uninjured by the freeze of February, 1917, when the temperature went down to 20° F. One of them, *Butia bonneti* (No. 43116), bears edible fruits the size of a plum, having an apricot flavor and being intensely fragrant and very juicy. They are orange-yellow with a red cheek, and a single bunch borne by one of Dr. Nehrling's trees comprised 980 fruits. The other species, *Butia capitata pulposa* (No. 43238), is quite as hardy, and bore fruit clusters of a thousand edible fruits weighing 50 pounds. Both are suited to the high pine lands of Florida, where economic plants are particularly needed.

From Italian Somaliland the yeheb nut, *Cordeauxia edulis* (No. 43260), has been again introduced. The fact that it contains about 12 per cent of albuminoids, 11 per cent of oil, 25 per cent of sugars, and 37 per cent of other carbohydrates and that it is said to be preferred to rice and dates by the inhabitants should entitle it to especial consideration in the southwestern arid regions. The degree of cold that it will stand is a factor to be determined.

Of forage plants recently introduced, few have come to us with so high a recommendation as *Pennisetum purpureum* (No. 43241), the gift of Mr. B. Harrison, of Burringbar, New South Wales. In dry seasons, plants under observation in Australia made a growth of 11 feet. The plant is succulent, greatly relished by stock, richer than green maize, and remains green even during six or eight months of drought when other plants are dried up. It is a perennial, yields 27 tons per acre, and is, altogether, considered to be an ideal forage crop for arid regions.

The Spanish garbanzo (*Cicer arietinum*), although grown now to a limited extent in California, is not given the consideration that it deserves when it is recollected that it is the staple food of the poorer classes in Spain and is grown in large quantities in Mexico and shipped to Spain by thousands of tons. A collection from Seville should awaken new interest in this dry-region legume (Nos. 43273 to 43280).

It would seem reasonable that the Buchanania (No. 43038), from the dry forests of Burma and India, which is leafless for a period and which ascends to an altitude of 3,000 feet, might be adapted to Florida and that its pellucid gum and varnish, as well as its oily kernels, which are said to resemble in flavor something between the almond and the pistache and to be much prized as a sweetmeat, may become articles of importance, much as the products of the pistache, to which it is related, are beginning to be in California.

A large collection of fruit varieties, mostly of New Zealand origin and comprising some selections and hybrids made by W. E. Lippiatt, J. F. Smith, and H. E. Sharp, is already making a good showing in the trial nurseries at Chico, Calif.; and American horticulturists will be interested to learn whether any of them prove especially adapted to American conditions (Nos. 43124 to 43186).

Twenty years ago Prof. Hansen obtained for the Bureau of Plant Industry some seed of a Russian sweet corn called the Malakoff. This variety appears in the Canadian gardens under the name Early Malcolm and has even been crossed with the Early Adams, producing a new variety called Early Ottawa. These seem to be the only varieties which are early enough to mature properly in the region around Ottawa, Canada, and therefore deserve to be better known in northern regions with similar short seasons (Nos. 43117 and 43118).

The breeders in the northern tier of States who are engaged in the production of hardier raspberries will take a particular interest in the selections of *Rubus strigosus* which were made by Mr. M. J. Dorsey, of the University of Minnesota. Mr. Dorsey was sent as an explorer to the Riding Mountains and Lake Winnipeg, where he found wild forms of especial promise for breeding and selection purposes (Nos. 43195 to 43201).

The botanical determinations of these introductions have been made and the nomenclature revised by Mr. H. C. Skeels and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has also had general supervision of this inventory, as of all the publications of this office. The manuscript of this inventory has been prepared by Mrs. Ethel H. Kelley.

David Fairchild,
Agricultural Explorer in Charge.

Office of Foreign Seed and Plant Introduction,
Washington, D. C., September 10, 1919.

INVENTORY.[1]

43013. CACARA PALMATILOBA (Moc. and Sesse) Kuntze. Fabaceæ.
(*Pachyrhizus palmatilobus* Benth. and Hook.) **Yam bean.**

From Zacuapam, Huatusco, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received July 6, 1919.

A climbing herb with a twining stem, bearing large tuberous roots. The palmate leaves are somewhat hairy, and the purplish flowers occur in long racemes. The large turgid pod is deeply depressed between the seeds. This plant is found in tropical America and is cultivated for its edible tuberous roots, although it is not so commonly cultivated as the other species of this genus. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, pp. 2425 and 2426.*)

43014. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Cuzco, Peru. Presented by Mr. A. A. Giesecke, rector of the University of Cuzco. Received July 6, 1916.

"I trust you will find these seeds interesting. They were collected after the season was nearly over and are not necessarily the best varieties." (*Giesecke.*)

43015. PAEONIA BROWNII × ALBIFLORA. Ranunculaceæ.
Hybrid peony.

From Los Angeles, Calif. Presented by Mr. P. D. Barnhart. Received July 11, 1916.

"Seeds of our native Paeonia which are the products of flowers that I pollinated with pollen of the Chinese type, such as you grow in the East. I got the material from the Henry A. Dreer people last year. They collected it from white varieties in their field. I hope to get a cross that will bear large flowers and plants that are adapted to this climate. Our hills are covered with them, but the flowers are small and inconspicuous, though they begin to bloom, and profusely too, in early February and continue into March. This year the first flowers appeared in January, and those that I worked failed to set seed. I used heavy paper sacks to protect the subjects from the rain and insects." (*Barnhart.*)

It remains to be seen whether these seeds will produce hybrid plants.

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[1] Each introduction consists of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the designations appearing in this inventory will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

43016 to 43019. GOSSYPIUM HIRSUTUM L. Malvaceæ. **Cotton.**

From Camaguey, Cuba. Presented by Mr. Robert L. Luáces, director, Granja Escuela Gaspar Betancourt Cisneros. Received July 10, 1916.

"Bolls from plants grown by Mr. Minor at Bartle, Cuba." (*Luáces.*)

43016. No. 1.
43017. No. 2.
43018. No. 3.
43019. No. 4.

43020. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Sorrento, Fla. Scions presented by Mr. Victor Lent. Received July 10, 1916.

Lent Golden. "The original seedling tree of this peach grew on the Levi Risinger place here at Sorrento. The tree originated about 1902. I can say nothing of the parentage of the tree. It has been dead for several years now, and no trees were budded from it except the ones which I now have. I have been raising this variety now for almost eight years; other yellow peaches do very poorly here. This year they ripened earlier than usual. I picked the first ripe fruit May 29 and the last on July 4. Last year none were ripe until June 30, and the last were picked on July 24." (*Lent.*)

43021 and 43022.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Numbered July 7, 1916. Quoted notes by Mr. Meyer.

43021. CLERODENDRUM CYRTOPHYLLUM Turcz. Verbenaceæ.

"(No. 2319a. Mokanshan, Chekiang, China, August 6, 1915.) A spreading shrub, from 2 to 5 feet high, sending up many stalks; found on débris on mountain slopes at altitudes of 1,200 to 2,000 feet. Leaves glabrous, opposite, light green, of somewhat fetid odor; flowers small, white, but with large bracts of rosy color; berries blue. Ornamental but somewhat weedy. Of use for large parks and estates in mild climates as a cover shrub for sandy and waste places."

43022. IRIS sp. Iridaceæ. **Iris.**

"(No. 2320a. Mokanshan, Chekiang, China, August 6, 1915.) An iris, forming big clumps, found in a garden, but said to occur wild in mountain ravines. Flowers reputed to be purplish."

43023. OSTERDAMIA MATRELLA (L.) Kuntze. Poaceæ. **Grass.**
(*Zoysia pungens* Willd.)

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received July 10, 1916.

Var. *Korai.* A creeping grass, important for binding coast sands, which does well on alkali soils and also as a lawn grass. Said to be relished by stock.

43024. CANARIUM INDICUM Stickm. Balsameaceæ. **Java almond.**
(*Canarium commune* L.)

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received July 10, 1916.

"*Java almond.* A large, handsome Malayan tree, characterized by a remarkable buttressed trunk and laterally compressed aerial basal roots; the latter develop enormous erect flanges of uniform thickness, so that solid circular pieces may occasionally be cut from them to form ready-made cart wheels. The tree is much cultivated for shade or ornament in Java. It bears in great abundance large pendent clusters of dark-purple fruits which are the size of small plums; these are produced all the year round, but chiefly in June. The kernel of the fruit is edible, being similar in flavor to sweet almonds; it yields by expression an oil for burning in lamps and for cooking purposes. A desirable tree for planting in avenues, etc. It thrives in hot and moist districts up to an altitude of about 1,500 feet, and prefers deep well-drained soil. Propagated by seed, which may be sown in nursery beds and kept moist and shaded until germinated." (*Macmillan, Handbook of Tropical Gardening and Planting, p. 146.*)

For an illustration showing Java almond trees growing in Buitenzorg, see Plate I.

43025. GOSSYPIUM HIRSUTUM L. Malvaceæ. **Cotton.**

From Camaguey, Cuba. Presented by Mr. Robert L. Luáces, director, Granja Escuela Gaspar Betancourt Cisneros. Received July 5, 1916.

"Bolls from plants grown by Mr. Minor at Bartle, Cuba." (*Luáces.*)

43026. ANANAS SATIVUS Schult. f. Bromeliaceæ. **Pineapple.**

From Singapore, Straits Settlements. Presented by Mr. J. L. Anderson, director, Botanic Gardens. Received July 18, 1916.

Suckers of the following varieties were mixed when received and were given only one number: *Harvey's, Mauritius, Pernambuco, Ruby, Sarawak.*

43027. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bel.**
(*Aegle marmelos* Correa.)

From Poona, Bombay, India. Presented by Mr. P. S. Kanetkar, superintendent, Botanical Gardens, at the request of Mr. G. A. Gammie, imperial cotton specialist, Kirkee, India. Received July 5, 1916.

"A small spiny tree, originally a native of India, now commonly grown in the low country of Ceylon and other tropical countries for its fruits. The latter are globular, with a hard, green shell, and vary in size from that of a cricket ball to that of a melon; it incloses a mass of doughy aromatic pulp, intermingled with which is a limpid glutinous substance which some people relish for its flavor but more particularly for its medicinal value. This is a well-known specific for dysentery and is much used in native medicines. The principal season for the fruits is during the months of February to May. The tree is propagated by seed and thrives in ordinary good soil." (*Macmillan, Handbook of Tropical Gardening and Planting, p. 134.*)

See S. P. I. Nos. 38389 and 41133 for previous introductions.

43028. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bel.**
(*Aegle marmelos* Correa.)

From Rangoon, Burma, India. Presented by Rev. H. S. Hascall. Received July 5, 1916.

"Season for fruit, March and April. You will notice that some of the seeds are clean and others are not free from the mucilaginous matter which is so difficult to remove and which is so susceptible to dampness that it takes only a little fog to make them adhere to each other." (*Hascall.*)

43029 to 43031. Ulmus spp. Ulmaceæ. Elm.

From Kief, Russia. Purchased from Messrs. St. Przedpelski and T. Antoniewicz. Received July 3, 1916.

43029. Received as *Ulmus androsowi* Litv., for which a place of publication has not yet been found.

43030. Received as *Ulmus bobyriana* Litv., for which a place of publication has not yet been found.

43031. Ulmus densa Litv.

"An elm of remarkably dense growth, sprouting a little distance above the ground into a number of stems which form an umbrellalike head of foliage which is so dense that it seems always twilight, even at bright noon, in an avenue of these trees. This elm apparently loves a climate with long, hot summers and with winters not too cold. It withstands a fair amount of alkali in the soil and in the irrigation water. It is of especial value as a shade tree in the hot and dry interior valleys of California, in Arizona, Texas, and New Mexico." (*Frank N. Meyer.*)

For a previous introduction, see S. P. I. No. 32831.

43032 and 43033. Juglans insularis Griseb. Juglandaceæ. Cuban walnut.

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station. Received July 22, 1916.

"This interesting Cuban tree has recently been called to the attention of horticulturists by Van Hermann and Roig. It is found in the mountainous sections of the island, sometimes at considerable altitudes. I have seen it in the mountains near Trinidad, on the south coast, at about 2,000 feet, growing among numerous other trees along the banks of small streams. It seems, however, to be comparatively rare, and does not occur in great numbers. It is erect and slender in habit, growing to a height of 40 or more feet, with foliage somewhat finer than *Juglans nigra* of the United States. The nuts resemble those of *Juglans nigra* in size and appearance, though sometimes smaller. The kernels, however, are removed with difficulty, the septæ being very thick and woody. In its present wild state the Cuban walnut, as it is called, does not seem to be of great horticultural value, but with very little improvement by selection it seems that it might become an excellent nut for tropical regions. It has been suggested that it might serve as a stock for the Persian walnut, making possible the culture of this species in Cuba and other tropical regions where it is not successfully grown. For illustrations of the tree and fruit, see Journal of Heredity, December, 1915." (*Wilson Popenoe.*)

43032. "Cuban native walnut, collected at Trinidad Station, Santa Clara Province." (*Roig.*)

43033. "Cuban native walnut, collected at Taco Taco, Pinar del Rio Province." (*Roig.*)

43034. Litchi chinensis Sonner. Sapindaceæ. Litchi.

(*Nephelium litchi* Cambess.)

From Swatow, China. Presented by Mr. G. C. Hanson, American consul. Received July 25, 1916.

"Grown in the neighborhood of Chaochowfu. This fruit is placed on the market at the beginning of the summer and can be obtained during only a very short period. The Swatow litchi has the reputation of not being as good as the Canton variety, which also matures early in the summer." (*Hanson.*)

43035 and 43036. ARACHIS HYPOGAEA L. Fabaceæ. **Peanut.**

From Buitenzorg, Java. Presented by Mr. L. Koch, Plant Breeding Station for Annual Crops. Received July 20, 1916.

43035. "Pure strain No. 21. Is almost unaffected by a severe malady known here under the name of bactery disease. Cultivated at the Plant Breeding Station for Annual Crops." (*Koch.*)

43036. "The variety cultivated here by the natives." (*Koch.*)

43037. RUBIA TINCTORUM L. Rubiaceæ. **Madder.**

From Paris, France. Procured from Vilmorin-Andrieux & Co. Received July 25, 1916.

"The root of *Rubia tinctorum* furnishes dyer's madder. The plant is a native of the south of Europe and is extensively cultivated about Avignon and in the Alsace for the roots, which afford the fine scarlet dye so highly valued by dyers and calico printers. A great quantity is grown in the Levant, the north of Africa, and in Holland; but that from Africa and the East, particularly that from Cyprus, is the most esteemed. Several attempts have been made to cultivate it in this country [England], but without success. The roots are dug up in the third summer after sowing and, having been deprived of their cuticle, are dried by artificial heat and then reduced to a powder. Madder has a bitter, astringent taste and imparts these properties to water and alcohol." (*Hogg. Vegetable Kingdom, p. 415.*)

43038. BUCHANANIA LATIFOLIA Roxb. Anacardiaceæ.

From Burma, India. Presented by the superintendent, Royal Botanic Garden, Sibpur, near Calcutta, India. Received July 22, 1916.

"A medium-sized tree, leafless only for a short time, met with in the dry forests throughout India and Burma, ascending in the sub-Himalayan tract to 3,000 feet. A pellucid gum (*peal* or *pial*) which exudes from wounds in the stem is more than half soluble in water. It is said to resemble Bassora gum, to have adhesive properties like inferior gum arabic, and to be suitable for dressing textiles. The bark and the fruit furnish natural varnish. The kernels yield a sweet and wholesome oil (*chiroji*), but owing to their being much prized as a sweetmeat when cooked, the oil is seldom expressed. The kernels, which have a flavor something between that of the pistachio and the almond, are eaten by the natives. In the hills of central India the fruits with the kernels are pounded and dried and subsequently baked into a sort of bread. From the Panjab and Bombay the leaves are reported as used for fodder. The timber is not very hard nor durable and is of small value, though made into spoons, plates, toys, and bedsteads, and is even employed for doors and window frames, plow handles, etc." (*Watt, Commercial Products of India, p. 188.*)

43039 to 43048.[2] PRUNUS BOKHARIENSIS Royle. Amygdalaceæ. **Plum.**

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens. Received July 25, 1916.

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[2] See footnote, p. 9.

43039 to 43048—Continued.

43039. *Late yellow.*
43040. *Alubokhara small.*
43041. *Alubokhara large.*
43042. *Alucha purple.*
43043. *Early large red.*
43044. *Large red.*
43045. *Alucha red.*
43046. *Large yellow.*
43047. *Dwarf early yellow.*
43048. *Ladakh.*

43049. Erythrina poeppigiana (Walp.) O. F. Cook. Fabaceæ.

(*E. micropteryx* Poepp.) **Bucare.**

From Mayaguez, Porto Rico. Presented by Mr. D. W. May, agronomist, Agricultural Experiment Station. Received July 3, 1916.

A leguminous tree commonly used for cacao shade in the West Indies. It attains 60 feet in height, but its wood is said to be so soft and water-logged as to be of no use even for fuel and so brittle that it will not withstand windstorms. It is being replaced in the cacao plantations because of this brittleness, because the leaves are off the tree from January to May, when they are most essential, and because the roots are surface feeders and interfere with cultivation. (Adapted from *Cook, Shade in Coffee Culture, Bul. 25, Division of Botany, 1901.*)

43050 to 43060.

From El Banco, Bolivar, Colombia. Collected by Mr. H. M. Curran. Numbered August 1, 1916. Quoted notes by Mr. Curran except as otherwise indicated.

43050. Cereus sp. Cactaceæ. **Cactus.**

Cuttings of an "ornamental white-flowered cactus, growing in immense masses on the limbs of forest trees."

43051. Crinum sp. Amaryllidaceæ.

Bulbs of "a low, ornamental forest plant; flowers white, fragrant. Highly prized by the natives of Colombia."

43052. Amorphophallus sp. Araceæ.

Corms of an "ornamental medicinal plant, used as a remedy against snake bite."

43053. Zephyranthes sp. Amaryllidaceæ.

"Bulbs of a small white Amaryllis. Cultivated in the gardens of the natives along the Magdalena River."

43054. Aristolochia sp. Aristolochiaceæ.

"Seeds of a fine Aristolochia, ornamental, growing wild in the low lands of the Magdalena River."

43055. Scheelea excelsa Karst. Phœnicaceæ. **Palm.**

"Trunk 40 to 50 feet high, 2 to 3 feet in diameter; wood reddish. Leaves 15 to 24 feet long, pinnate. Inflorescence in the axils of the leaves, long pedunculate; peduncle 4 to 5 feet long; spathe solitary, fusiform; spadix simply and sparsely branched, 3 feet long, branches 4 to 6 inches long. Fruit drupaceous, edible, ovoid apiculate, about the size of a duck's egg; pericarp mucilaginous, oily, intermixed with fibers; epicarp leathery, yellow; seed bony, one to three celled. Grows in hot valleys of the Magdalena and Canea up to an altitude of about 3,000 feet." (*C. B. Doyle.*)

43050 to 43060—Continued.

43056. ATTALEA SPECTABILIS Mart. Phœnicaceæ. **Palm.**

Ornamental Brazilian palm, stemless or with a very short caudex. The erect or spreading leaves are 18 to 21 feet long; the lower segments are 3 to 4 feet and the upper 12 to 16 inches long. The fruit is about as large as a hen's egg. A native of the banks of the Amazon. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 428.*)

43057. BULNESIA ARBOREA (Jacq.) Engl. Zygophyllaceæ.

"*Guayacan.* One of the principal trees of this region; wood hard, durable; 60 to 70 feet high, 24 inches in diameter. Flowers yellow. Timber weathers, being used for railroad ties, which are not expensive. Magdalena River above Calamar, March 25, 1916."

43058. ASTROCARYUM sp. Phœnicaceæ. **Mat palm.**

"*Palma estera.* Common palm of the forest, Tierras de Loba, Bolivar, Colombia. Seeds with an edible coating and will probably yield a commercial oil. Plants with huge ornamental fronds, 20 feet or more in length, glossy green above, glossy or silvery white beneath. Entire plant covered with sharp black spines. This palm has practically no stem. Suitable only for planting in moist localities or greenhouses."

43059. CANAVALI ENSIFORME (L.) DC. Fabaceæ. **Jack bean.**

"From Tierras de Loba, Bolivar."

"In Porto Rico the jack bean has been found very useful as a green-manure and cover crop in citrus groves. Its bushy habit makes it especially desirable, as it does not interfere by climbing the trees, while its dense, vigorous growth shades the ground during the heat of summer and provides abundant vegetable matter to add to the soil. Its successful utilization as green feed in Hawaii encourages the belief that it may be found equally valuable in this country, especially in Texas and Oklahoma, where its great drought resistance gives it particular promise." (*C. V. Piper, in Bureau of Plant Industry Circular 110, p. 33.*)

43060. GOSSYPIUM sp. Malvaceæ. **Cotton.**

"*Barranquilla* cotton. Common cotton from a small plantation on the banks of the Magdalena River in the vicinity of Mompos. This seed was probably distributed by the Department of Agriculture of Colombia. Plants 4 to 6 feet in height and full of fruits and flowers at the time of collection, June, 1916."

43061 to 43069.[3] RAPHANUS SATIVUS L. Brassicaceæ. **Radish.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Numbered August 4, 1916.

43061. *Thirty Days.*

43062. *Miyashige.*

43063. *All Seasons.*

43064. *Ninengo.*

43065. *Bottle.*

43066. *Sakurajima Mammoth.*

43067. *Shogoin.*

43068. *Nerima.*

43069. "*Long String.* This is a sort of Japanese radish, and the peculiarity of this variety is that it grows over 3 feet long with a circumference of 2 to 3 inches. A most suitable variety for pickling purposes." (*Yokohama Nursery Co., Catalogue, 1916, p. 77.*)

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[3] See footnote, p. 9.

43070. Ananas sativus Schult. f. Bromeliaceæ. **Pineapple.**

From Lawnton, Queensland, Australia. Suckers presented by Mr. Reginald W. Peters, director, Queensland Acclimatization Society. Received August 3, 1916.

"A seedling pineapple we raised and have named *Commonwealth.* It is distinct, of fair size, and very tender, with almost entire absence of stalk or core. It is sweet and perhaps lacking a little in subacidity, but is a fruit most consumers would enjoy." (*Leslie Gordon Corrie.*)

43071 and 43072.

From South Yarra, Melbourne, Australia. Presented by Mr. J. Cronin, curator, Melbourne Botanic Gardens. Received July 24, 1916.

43071. Owenia venosa F. Muell. Meliaceæ. **Queensland sour plum.**

An Australian tree reaching a height of 40 feet, with a diameter of 3 feet. A native beverage is made from the sour fruit, and the durable, easily worked wood, which is of great strength and is highly colored in various shades from yellow to black, is used for cabinetwork, although its excessive weight and hardness are against its common use. (Adapted from *Maiden, Useful Native Plants of Australia, pp. 49 and 581.*)

43072. Livistona australis (R. Br.) Mart. Phœnicaceæ. **Australian fan palm.**

"An Australian fan palm with stem reaching a height of 80 feet, slender and marked with circular scars; leaves in dense crown, round, 3 to 4 feet in diameter, divided to or below the middle into 40 to 50 narrow, acuminate segments, either entire or two cleft at the apex. It is more stubby growing in greenhouse culture than *Livistona chinensis,* the leaves are stiffer, smaller in proportion, and less graceful, and the footstalks are more thoroughly armed with stout spines. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1895.*)

43073. Coffea amara Bruijning. Rubiaceæ. **Coffee.**

From Fort Dauphin, Madagascar. Presented by Mr. G. Regnard, Port Louis, Mauritius. Received August 1, 1916.

"Local name *Mautsaka.* French name *Café Marchal.* Without caffeine." (*Regnard.*)

43074. Urena lobata L. Malvaceæ.

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station. Received August 5, 1916.

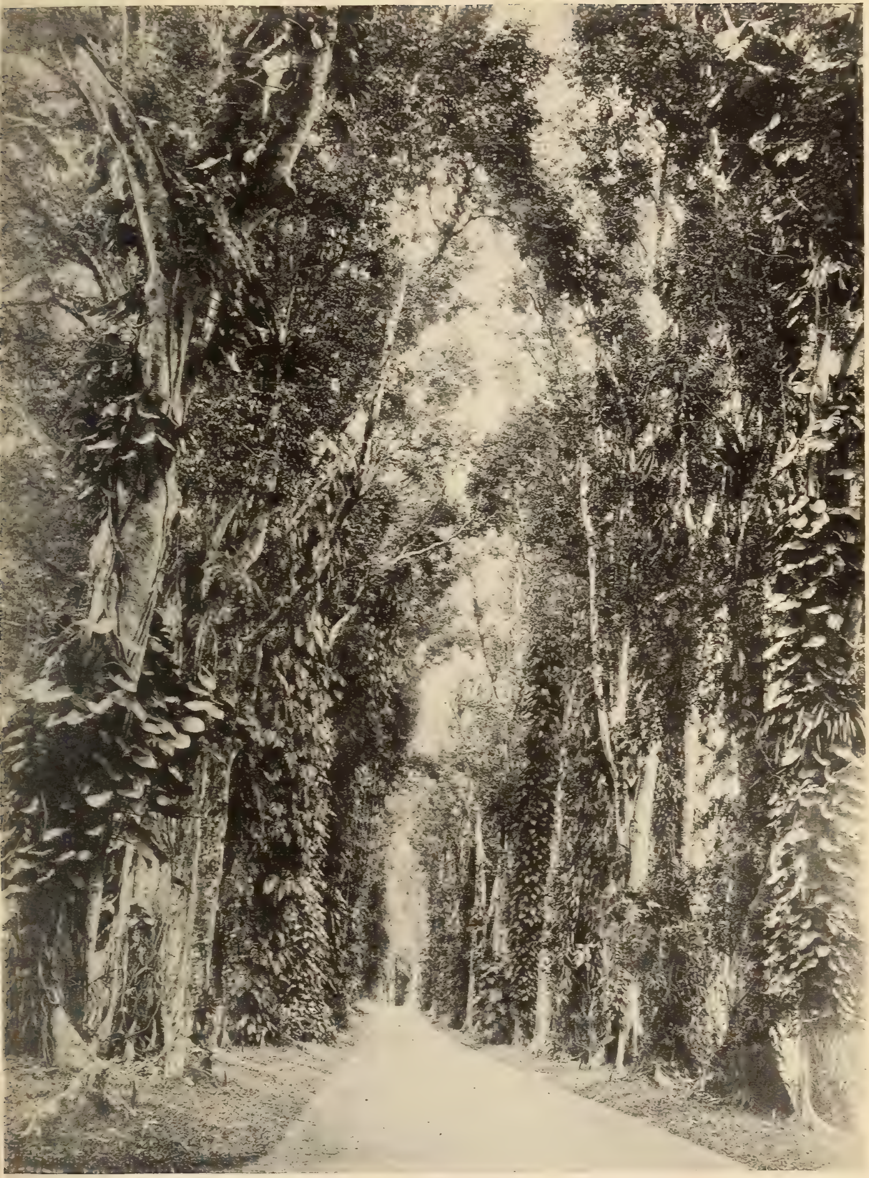
"The most promising native fiber plant, known as *Malva blanca.* Is considered a good substitute for jute." (*Roig.*)

43075. Tumion nuciferum (L.) Greene. Taxaceæ.

(*Torreya nucifera* Sieb. and Zucc.)

From Hankow, China. Procured through the American consul general. Received July 14, 1916.

Fei tzu. "Occurs in the southern islands of Japan and in the forests of southern and central Hondo, attaining its greatest development on the banks of the Kisagawa River, rising to a height of 80 feet and forming a tree unequaled in the massiveness of its appearance and in the beauty of its bright red bark and lustrous dark-green, almost black foliage. On the southwest



AN AVENUE IN BUITENZORG LINED WITH JAVA ALMOND TREES (CANARIUM INDICUM STICKM., S. P. I. NO. 43024).

The stately Java almond, generally acknowledged to be one of the most beautiful of avenue trees, yields an abundance of large-kerneled edible nuts, similar to the pili nut of the Philippines. The oil from this nut has been used by certain Dutch doctors to make an emulsion for an infant food, and its possibilities as a special oil for infant feeding deserve study. Seeds have been secured for trial in the Panama Canal Zone. (Photographed by Dr. M. Treub, Buitenzorg, Java, Feb. 10, 1909.)

AN IMPORTANT OIL PRODUCER IN THE TROPICS, THE BRAZIL NUT (BERTHOLLETIA NOBILIS MIERS., S. P. I. NO. 43114).

This giant of the Brazilian forests is a stately and imposing ornamental tree. Its nuts yield a vegetable oil that deserves considerable attention. Its uses by watchmakers and artists would seem by no means to delimit its possibilities, although over a million dollars' worth of nuts were imported into the United States in 1914 for these purposes and for the edible kernels. The kernels yield approximately 70 per cent of oil. (Photographed by Mr. O. W. Barrett at the Royal Botanic Gardens, Port of Spain, Trinidad.)

coast of Hondo, where it is associated with camellia, *Diospyros kaki*, and other garden favorites, it is somewhat different from the inland trees; the head is more dense and with a rounded top not unlike that of some of the older yews in this country; the leaves too are shorter, narrower, and more pointed. The wood is strong and straight grained; it is much valued for building and cabinetmaking." (*Veitch, Manual of Coniferæ, 2d ed., p. 119.*)

43076 to 43112. PRUNUS NIGRA Ait. Amygdalaceæ.

Canada plum.

From Canada. Scions secured by Mr. M. J. Dorsey, University of Minnesota, St. Paul. Received August 7, 1916.

43076 to 43088.

"Scions from the most promising of the W. D. Buchanen seedlings, growing in the orchard at the Manitoba Agricultural College. These were selected for their promise from the larger collection of Mr. Buchanen and represent the best wild types found in the range of the species in Canada. No records are available as to their exact place of origin. The numbers refer to the row and tree locations in the above orchard." (*Dorsey.*)

43076. Row 1, tree 1.
43077. Row 1, tree 14.
43078. Row 1, tree 16.
43079. Row 1, tree 25.
43080. Row 1, tree 26.
43081. Row 1, tree 27.
43082. Row 2, tree 1.
43083. Row 2, tree 16.
43084. Row 2, tree 24.
43085. Row 2, tree 26.
43086. Row 3, tree 9.
43087. Row 3, tree 13.
43088. Row 3, tree 16.

43089 to 43112.

"Scions taken from the best trees now remaining in the Buchanen nursery, near Winnipeg. These were selected with the assistance of Mr. Buchanen and are numbered as they were cut. All records of their origin are lost and no labels are legible. The types represent the best of the species in Canada and should be of interest both for their fruit and also taxonomically. None of the seedlings show any evidence of winter-killing, and for this reason they are no doubt of value as breeding stock for the northern United States." (*Dorsey.*)

43089. No. 1, tree 16.
43090. No. 3.
43091. No. 4.
43092. No. 5.
43093. No. 6.
43094. No. 7.
43095. No. 8.
43096. No. 10.
43097. No. 11.
43098. No. 12.
43099. No. 13.
43100. No. 14.
43101. No. 15.
43102. No. 16.
43103. No. 17.
43104. No. 18.
43105. No. 19.
43106. No. 20.
43107. No. 21.
43108. No. 22.
43109. No. 23.
43110. No. 24.
43111. No. 25.
43112. No. 26.

43113. Mangifera indica L. Anacardiaceæ. **Mango.**

From Pasumalai, Madura District, southern India. Presented by Rev. J. X. Miller, American Mission High School and Training Institution. Received August 7, 1916.

Seeds of a large mango.

43114. Bertholletia nobilis Miers. Lecythidaceæ. **Brazil nut.**

(*B. excelsa* Berg. not Humb. and Kunth.)

From Para, Brazil. Secured through Mr. George H. Pickerell, American consul. Received August 8, 1916.

"*Brazil nut* or *Para nut.* A tall handsome tree, with oblong wavy leaves which are 14 to 16 inches long and about 3 inches broad, native of Guiana, Venezuela, and Brazil. In its native home, especially on the banks of the Amazon and Orinoco, the tree attains a height of over 100 feet. The tree was introduced at Peradeniya in 1880, and notwithstanding the indifferent ground chosen for it when first planted out, appears to find here a congenial home. It is now [1914] about 60 feet high and produces at the top each year, in the dry season, large erect racemes of white flowers, followed a few months later by a number of large brown fruits which hang on the trees for some months after ripening. Ridley records similar success with the tree at Singapore, where it was introduced in 1881. Each fruit is from 4 to 6 inches in diameter, with a hard brown woody shell which has to be sawed or broken open with an axe in order to obtain the nuts (seeds). In the interior, closely packed, are from 10 to 12 large angular seeds, with a brown horny testa; these are the Brazil nuts of commerce, which form an important article of export from their native country, being largely used for dessert in Europe, America, etc. The tree may be propagated by seed or gootee (layering) and thrives best on a rich alluvial soil in a hot and moist climate." (*Macmillan, Handbook of Tropical Gardening and Planting, 2d ed., p. 144.*)

For an illustration of a Brazil nut tree growing on the island of Trinidad, see Plate II.

43115. Passiflora lutea L. Passifloraceæ. **Granadilla.**

From Augusta, Ga. Presented by the P. J. Berckmans Co. Received August 8, 1916.

"The ordinary 'passion flower' of the South, climbing or trailing to a height of 10 feet. Flowers greenish yellow, nearly an inch across; berries half an inch in diameter, smooth, deep purple, not edible. This vine occurs native as far north as Pennsylvania and Illinois, and it is quite probable that resistant hybrids with edible passifloras may be secured." (*Fairchild.*)

43116. Butia bonneti (Linden) Becc. Phœnicaceæ. **Palm.**

From Fruitland Park, Fla. Presented by Mr. Louis Bosanquet. Received July 24, 1916.

H. Nehrling describes this palm as follows: "*Cocos gaertneri* Hort. This is one of the very best of our garden palms, a fast grower, very elegant, and with a dense leaf crown of rather erect fronds. My specimen is about 15 years old. I raised it from seed, which was sent to me by the late Mr. Gaertner from southern Brazil. . . . The trunk is at present 6 feet high and is covered all over with several species of orchids, bromeliads, cacti, etc. . . . It bears heavily, and I have counted as many as 980 fruits in one bunch. They are closely packed, of the size of a small plum, orange-yellow with a red cheek, very juicy, intensely fragrant, and of an apricot flavor. . . . This is a most beautiful palm, reminding one in its shape very much of *C. datil*, but it is not so massive. The leaves are about 10 feet long." (See *Proceedings of the Twenty-Second Annual Meeting of the Florida State Horticultural Society, May, 1909, p. 57.*)

"Blumenau, who first described this species, recommended it for cultivation because of its great hardiness. He says that it grew in a locality exposed to occasional frosts and even snow, with temperatures of 10° or 12° C. below freezing. Barbosa Rodriguez, in a recent work on the Brazilian palms, has placed this species as a synonym under *Cocos eriospatha*." (*C. B. Doyle.*)

43117 and 43118.[4] ZEA MAYS L. Poaceæ. **Corn.**

From Ottawa, Canada. Presented by Mr. J. H. Grisdale, director, Central Experiment Farm. Received August 18, 1916.

43117. "*Early Malcolm* sweet corn, a variety which Mr. Logsdail says is nothing more than the *Malakoff* which Hansen brought from Russia and which is the only variety that matures consistently in the region of Ottawa." (*Mr. Fairchild's report, 1915.*)

43118. "*Early Ottawa.* This strain was produced by employing *Early Malcolm* as the pollen parent and *Early Adams* as the female parent. We have found that this seed does best in areas where the average length and development of the season are similar to our conditions around Ottawa." (*A. J. Logsdail.*)

For an illustration of this sweet-corn hybrid, see Plate III.

43119 to 43123.[4] ANANAS SATIVUS Schult. f. Bromeliaceæ. **Pineapple.**

From Singapore, Straits Settlements. Presented by Mr. I. H. Burkill, director, Botanic Gardens. Received August 16, 1916.

Suckers of the following varieties:

43119. *Harvey's.*

43120. *Mauritius.*

43121. *Pernambuco.*

43122. *Ruby.*

43123. *Sarawak.*

43124 to 43187.

From Avondale, Auckland, New Zealand. Plants presented by Mr. H. R. Wright. Received August 12, 1916. Quoted notes from the Avondale Nursery catalogue, except as otherwise noted.

43124 to 43138.[4] AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

43124. "*A 1.*[4] A counterpart of *Paragon*, ripening about March 9, also a seedling from *Elberta*. An ideal market peach. The growth is short, thick, and compact, with very large, handsome foliage. Tree an annual and heavy bearer."

43125. "*Golden Queen.* A yellow-fleshed clingstone, raised by Mr. Reeves, Tauranga. It is claimed to be one of the best canning peaches. Tree compact in growth, heavy cropper; fruit of medium size, deep yellow to stone, and will hang well."

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[4] See footnote, p. 9.

43124 to 43187—Continued.

43126. "*Ice Cream.* A cross between *Up-to-Date* and *Osprey Improved.* Tree very vigorous, enormous dependable cropper; fruit of large size, ripening just after *Osprey Improved* [S. P. I. No. 43134], cream color, with red on sunny side, freestone, exquisite flavor."

43127. "*Ideal.* New, second early, very good."

43128. "*Kerr's Late.* A seedling from *Salway.* The fruit is large, with a deep yellow skin and beautiful red cheek; a perfect freestone; one of the most dependable croppers of late peaches."

43129. "*Late Champion.* Resembles *Waikato Champion*, but, unlike that variety, is a good cropper and ripens about three weeks later. It is one of the largest peaches grown, and bears heavy and regular crops every year."

43130. "*Lippiatt's Late Red.* Another fine peach; color creamy, mottled, striped, and overspread with dark red; tree a fine grower and an immense bearer."

43131. "*Model.* Seedling from *Paragon.* This peach, as its name implies, leaves nothing wanting in a commercial fruit of very large size; heavy cropper, good quality, and of beautiful color; yellow flesh, semicling; little later than *Paragon* [S. P. I. No. 43135]."

43132. "*Motion's Cling.* A large clingstone, resembling *Stark* in appearance; an ideal market variety, being of very high color; will prove a commercial peach; a great cropper."

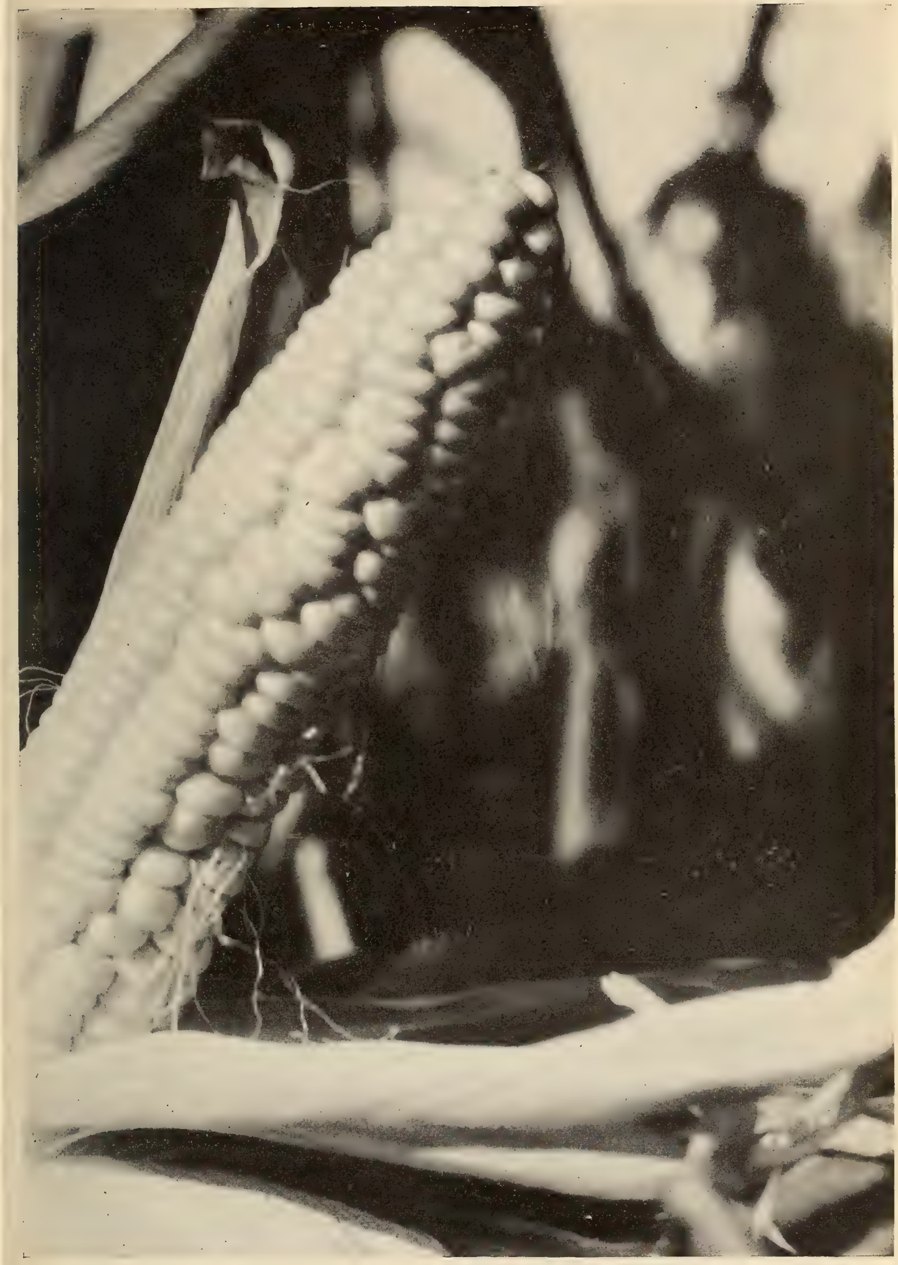
43133. "*Muir's Perfection.* This is one of the finest midseason peaches I have ever seen; its rare size and handsome appearance will easily place it as a sure prize winner. Its flavor is delicious, flesh white, freestone. Fruits beautifully colored, even in the shade of the tree. In shape like that of *Sea Eagle*, and often quite as large. For commercial or home use it, without a doubt, will become a great favorite."

43134. "*Osprey Improved.* A fine peach for home use, fine size and good quality, but too soft and lacking in color for market; a most dependable cropper."

43135. "*Paragon.* A yellow-fleshed clingstone peach of my own raising. All points considered, as an all-round peach it stands alone in its season. In the whole catalogue no peach can compare with it from year to year for cropping. *Paragon* is a favorite with all growers. It is too well known now to require further comments. As a cropper it will rank among peaches as *Burbank* among plums."

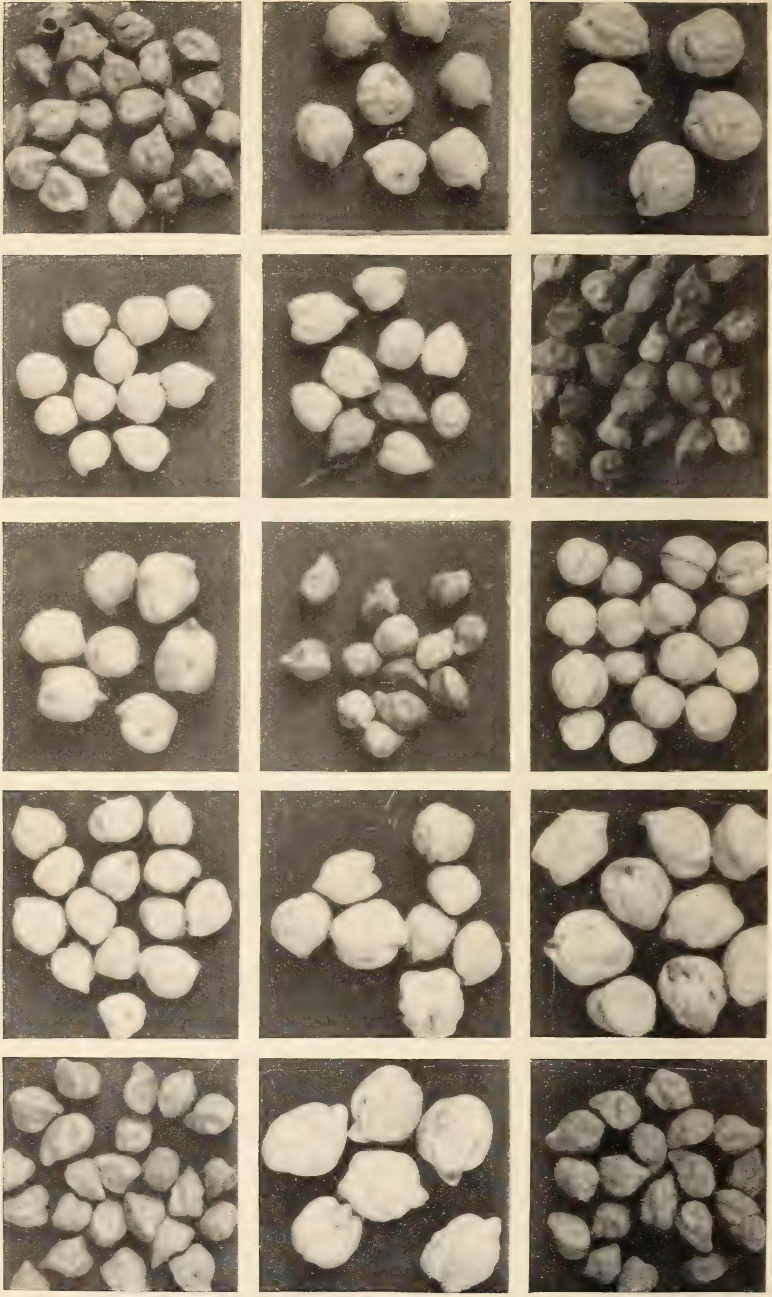
43136. "*Shipper Cling.* A very large clingstone peach of our own raising, with deep pumpkin-yellow flesh, orange-yellow skin, very red cheek, and a very attractive appearance. It is by far the finest peach for either bottling or canning, for when preserved the fruit remains intact. Those growing peaches for their own bottling should try this grand peach, as it is simply delicious."

43137. "*Up-to-Date.* Yellow-fleshed freestone seedling of my own raising. Most vigorous of all peaches; tree heavy bearer; fruit of immense size and of delicious flavor. This variety we find better suited for canning and home use, being rather tender for long shipments."



AN EARLY-MATURING CROP FOR THE NORTH, SWEET CORN (ZEA MAYS L., S. P. I. No. 43118).

A cross between the Early Malcolm (staminate parent) and the Squaw corn (pistillate parent). The Early Malcolm (a straight selection from the Malakoff, S. P. I. No. 13, an early introduction from Russia) is the only variety that matures regularly in Ottawa. The cross is a very sweet variety. (Photographed by Mr. Fairchild, Sept. 17, 1915, at the Central Experimental Farms, Ottawa, Canada; P19316FS.)



SEEDS OF A STAPLE FOOD PRODUCT IN SPAIN, A FEW OF THE NUMEROUS VARIETIES OF CHICK-PEA (CICER ARIETINUM L., S. P. I. NOS. 43273-43280).

The chick-pea, or garbanzo of Spanish countries, is used very extensively. In some regions it stands next in importance to wheat as a food plant. It is employed in meat stews almost universally in Spain and is eaten as a breakfast dish in Asia Minor in the form of a puree. Muffins made from chick-pea meal closely resemble corn-meal muffins. The chick-pea is an arid-region plant and does not thrive where the summers are moist. Its leaves are covered with sticky hairs containing oxalate of lime; this makes it somewhat disagreeable to harvest by hand. In regions where it grows well it should be carefully studied as an important leguminous grain crop. (Photographed by E. C. Crandall, Dec. 21, 1909; P6248FS.)

43124 to 43187—Continued.

43138. "*Weeping.* These are most showy and decorative trees to plant, being ornamental as well as useful. The pendulous habit makes them very conspicuous when planted on a lawn or drive. If the ground is well manured and cultivated around them, they will produce great crops of fruit of splendid quality. These are worked on standard stocks, ranging in height from 5 feet to 6 feet 6 inches."

43139 to 43146.[5] AMYGDALUS PERSICA NECTARINA Ait. Amygdalaceæ. Nectarine.

43139. "*Ansenne.* The parent of *Goldmine.* The fruit is of the largest size and of very light color; flesh tender, melting, and of most delicious flavor; tree extremely hardy and a regular cropper."

43140. "*Diamond Jubilee.* This new nectarine is very large in size, larger than any except *Zealandia;* bright red in the sun, dull red in the shade; flavor exquisite, flesh greenish white, melting, and very sweet; a prodigious bearer. Young transplanted trees in the nursery rows were carrying fruit, and the branches of the older trees were bending down with the weight of fruit. The points in this nectarine are its heavy cropping, large size, and delicious flavor."

43141. "*Goldmine.* The fruit is of enormous size. It is a perfect freestone, the pit being extremely small for so large a fruit. The fruit is a beautiful cream color, tender, juicy, melting, sugary, and of most delicious flavor; color bright bronzy red; season of ripening, second week of February; a very heavy cropper."

43142. "*Lippiatt's Late Orange.*"

43143. "*Muir's Seedling.* A new seedling of the *Goldmine* type, resembling that variety in size and color, but ripening when *Goldmine* is all finished, thus prolonging the season and an acquisition on that account."

43144. "*New Boy.* Fruit of large size and extremely handsome, covered all over with brilliant crimson; flesh white, juicy, sugary, and of exquisite flavor; tree very hardy and a profuse cropper; one of the best."

43145. "*Radium.* A new nectarine of large size, orange shaped, highly colored, very sweet; ripens just after *Goldmine.* It is quite free from that objectionable point which all the large nectarines possess; therefore, for packing, *Radium* comes first."

43146. "*Surecrop.* A seedling of my own raising, which resembles *Goldmine* in size and appearance, but is a much heavier cropper. It has never failed to carry a full crop. I have every confidence in recommending this grand new nectarine."

43147. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Orange.**

"*Best Seedless.*[5] A new local seedling of great merit and, as its name indicates, perfectly seedless; in quality one of the finest we have ever sampled and sure to become a great favorite; the most vigorous of all oranges."

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[5] See footnote, p. 9.

43124 to 43187—Continued.

43148. Eriobotrya japonica (Thunb.) Lindl. Malaceæ. Loquat.

"*Thames Prize.*[6] Named so from the fact that it has always carried off the prize at the Thames show, the district of its origin; fruit of large size and very fleshy. Tree very vigorous."

43149 and 43150.[6] Fragaria sp. Roseceæ. Strawberry.

43149. "*Melba.*[6] Fruit large, brilliant red, and of the best flavor when grown in good land; with plenty of moisture it will bear good crops from the beginning of November to May. As the young runners commence to fruit as soon as well rooted, they should be left, making beds, say, 3 feet wide, grown into a solid mass. Although the fruit is covered with foliage, it will still be fully colored. I would strongly recommend this variety to strawberry growers."

43150. "*Phenomenal.* A remarkably early variety; fruit large, splendid flavor and color, carrying well; extremely vigorous. This variety is without doubt the finest carrying strawberry we know of and one that will often produce good autumn crops."

43151 to 43174.[6] Malus sylvestris Mill. Malaceæ. Apple.
(*Pyrus malus* L.)

43151. "*Bella Davis.* Dessert."

43152. "*Carlton.* A blight-proof seedling from *Northern Spy;* fruit very large, yellow, striped carmine; flesh crisp and juicy; tree a heavy cropper and bears young; season late."

43153. "*Cliff's Seedling.* Raised from pips of *Northern Spy;* fruit medium to large, *Pearmain* shaped. It is highly colored; flavor exquisite; flesh yellow, crisp, and juicy, blight proof, late."

43154. "*Climax.* Dessert. Another perfectly blight-proof apple, raised by Mr. J. F. Smith. Fruit is above medium size and roundish, skin clear waxy yellow, streaked and dotted on the sunny side with lively crimson; flesh yellow, crisp, juicy, tender, and of honeyed sweetness." (*C. A. Nobelius's catalogue.*)

43155. "*Coldstream Guards.* A first-class early summer dessert apple; size medium to large; smooth, round, of bright color and very taking appearance; can not be too highly recommended for market; tree healthy, hardy, and a heavy cropper; resembles *Red Astrachan;* blight proof."

43156. "*Cole's Blushing Bride.* A beautiful dessert apple, of most handsome appearance, and somewhat conical in shape; tree a heavy cropper and blight proof; highly recommended; medium."

43157. "*Diadem.* Dessert cooking."

43158. "*Edward Lippiatt.* A blight-proof seedling raised by Mr. W. E. Lippiatt; fruit large, roundish, sometimes oblate; even and regular in outline; skin yellow, streaked with lively crimson; flesh white, crisp, juicy, and sweet, with a fine aromatic perfume and exceedingly rich flavor. Tree vigorous, a heavy and early bearer. A most vigorous apple for commercial and home use."

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[6] See footnote, p. 9.

43124 to 43187—Continued.

43159. "*General Carrington.* Raised by Mr. J. F. Smith from *Northern Spy* pips. Tree of strong, vigorous, upright habit and perfectly blight proof. Fruit large and handsome; skin yellow, beautifully striped with crimson; flesh yellowish white, rich, crisp, juicy, and sugary, of delicious flavor; late." (*C. A. Nobelius's catalogue.*)

43160. "*George Neilson.* A large early apple, resembling *Red Astrachan,* of which it is said to be an improvement; blight proof."

43161. "*Hay's Midseason.* Fruit large, beautifully striped, bright carmine on greenish yellow ground; flesh firm, yellow, crisp, juicy, sweet, and of exquisite flavor; blight proof." (*C. A. Nobelius's catalogue.*)

43162. "*John Sharp.* Late; fruit large; skin smooth, greenish yellow, covered with red and russet dots; flesh juicy and sweet; tree vigorous and a regular bearer; blight proof; late coming into bearing."

43163. "*Kennerley's May.* Cooking; very late."

43164. "*Lilydale* (dormant buds). Very early dessert."

43165. "*Lord Wolseley.* Fruit medium size, roundish conical; skin clear rich yellow, flesh very firm, juicy, subacid, brisk; tree a constant bearer and quite blight proof; dessert and culinary; late."

43166. "*Marjorie Hay.* A very early dessert apple raised by Mr. H. E. Sharp. Fruit very large and extremely handsome; one of mottled, with lovely red flesh; white, tender, juicy, and very crisp. Highly recommended by the raiser as the best early blight-proof apple."

43167. "*Mona Hay.* A blight-proof seedling raised by Mr. H. E. Sharp; fruit of medium size and of exquisite flavor; one of the best; medium."

43168. "*Patuka* (new); not quite aphis resistant; very late dessert. Patuka is Maori for Port Albert." (*Wright.*)

43169. "*Red Spy.* Dessert."

43170. "*Sharp's Late Red.* A blight-proof seedling raised by Mr. H. E. Sharp. Fruit very large and extremely handsome; one of the best."

43171. "*Sharp's Nonesuch.* Cooking."

"Another of Mr. H. E. Sharp's seedlings. Vigorous grower and blight proof; skin deep yellow, striped with red; flesh yellow, tender, and very juicy; pleasant flavor; medium." (*C. A. Nobelius's catalogue.*)

43172. "*Taupaki* (Maori name of a place). Dessert." (*Wright.*)

"A New Zealand variety; most highly colored and perfectly shaped fruit; a yellow ground streaked and striped with bright crimson; a good keeper." (*C. A. Nobelius's catalogue.*)

43173. "*Te Whiti.* The tree is a strong, clean, and vigorous grower and an abundant bearer; medium size, dark red in color, rich and of fine flavor; unsurpassed as a late keeper."

43124 to 43187—Continued.

43174. "*Willie Sharp.*"

"A beautiful medium-sized dessert apple; skin yellow, nearly transparent in ripening, flesh crisp, of vinous flavor." (*P. L. C. Shepherd & Son's catalogue.*)

43175 to 43181.[7] PRUNUS SALICINA Lindl. Amygdalaceæ. **Japanese plum.**

43175. "*Akarana.* A chance seedling which resembles *Botan.* Tree a vigorous grower and heavy cropper; fruit of magnificent color and firm flesh. A good succession to *Wright's Early.*"

43176. "*Alpha.* Of large size and distinct flavor, very firm, ripe with *Akarana*, and a reliable cropper."

43177. "*Export.* A new hybrid, a cross between *Wright's Late* and *Early Golden;* fruit medium to large and very firm; exceedingly sweet. This, like the preceding one, also lacks the foxy taste. This should prove to be one of the most valuable blood plums in existence, owing to being a wonderful keeper; fruit has been kept for six weeks after picking, and on the tree it has been kept for three months. Season, middle of January to April."

43178. "*Sharp's Early.* Raised by Mr. John Sharp, Cambridge. Supposed to be a seedling from *Botan;* fruit heart shaped, medium size, purple in color when thoroughly ripe; tree a great cropper. In season about the 15th of December."

43179. "*Wright's Early* on peach."

"A seedling from *Burbank*, raised by myself; the earliest and most profitable of all plums. The fruit is identical with the well-known *Burbank*, the only difference being its season of ripening and the habit of growth, being more erect, which is a great point in its favor."

43180. "*Wright's Early* on plum." See description under previous number (S. P. I. No. 43179).

43181. "*Wright's Purple.*"

43182. PRUNUS SALICINA × (?). **Hybrid plum.**

"*Best's Hybrid.*[7] A splendid all-purpose plum, i. e., dessert and culinary. This is a cross between *Cherry* plum and *Ogon;* fruit large, yellow, shaped like *Cherry* plum; tree enormous cropper; the absence of the foxy taste peculiar to Japanese plums is a great point in its favor, and it will become a great favorite."

43183 to 83186.[7] PYRUS COMMUNIS L. Malaceæ. **Pear.**

43183. "*Belmont.* A New South Wales seedling, raised from the well-known *Bon Chrétien*, ripening about the 10th of April; shape roundish, tapering slightly to the stalk; skin golden; flavor identical with *Bon Chrétien;* an early and heavy cropper, coming into bearing the second year; first-class dessert."

43184. "*Packham's Late.* Another of Mr. Packham's seedlings, which promises to outrival his *Triumph* [S. P. I. No. 43185]; fruit fairly large and heavy cropper. From what I have seen of the *Triumph* I am more than satisfied, as it is unquestionably the finest of its season."

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[7] See footnote, p. 9.

43124 to 43187—Continued.

43185. "*Packham's Triumph.* This is the king of the autumn pears and a triumph in pear culture. The tree is a tremendous cropper and comes into bearing at an early age. In season about the second week in April. We have had the pleasure of both seeing and sampling this grand pear from specimens procured from Sydney by post. It is a counterpart of Williams's *Bon Chrétien* in appearance, flavor, and perfume. It carried off the prize every time it has been exhibited. I should say that it must be a seedling or hybrid from *Williams.* There is a great future in this pear as a money maker."

43186. "*Winter Cole.* Seedling from *Winter Nelis*, which it resembles. Fruit almost round, medium size, pale yellow, spotted with russet; one of the richest of pears."

43187. Astelia sp. Liliaceæ.

"An epiphyte which grows on the trees. I think the seed would grow best in a mixture of leaf mold and decayed wood dust. A delicious honey is made from the flowers of the plant." (*Wright.*)

43188. Lathyrus sulphureus Brewer. Fabaceæ. **Vetchling.**

From Columbia, Calif. Collected by Mrs. Adele Lewis Grant. Received August 14, 1916.

A smooth-stemmed betchling from the northwest coast, not rare in open coniferous woods. The flowers are at first pinkish yellow, fading to ochraceous, never sulphur yellow as described by Brewer. (Adapted from *Piper and Beattie, Flora of the Northwest Coast, p. 225.*)

43189. Pterocarpus marsupium Roxb. Fabaceæ. **Kino tree.**

From Dindigul, Madura District, southern India. Presented by Rev. W. P. Elwood, American Madura Mission. Received August 12, 1916.

"*Vengai.* A tree with beautiful hard wood. The tree grows at an altitude of 3,000 to 4,000 feet and endures a good deal of heat and drought. A great many of the seeds are destroyed by worms and other insects entering the seed vessel at the side." (*Elwood.*)

For an interesting discussion of kino production, see *Watt, Commercial Products of India, pp. 908 and 909.*

43190 to 43194.

From Africa. Presented by Rev. C. W. Guinter, Sudan United Mission, Northern Nigeria. Received August 9, 1916. Quoted notes by Rev. Mr. Guinter.

43190 and 43191. Pennisetum glaucum (L.) R. Br. Poaceæ. (*P. typhoideum* Rich.) **Pearl millet.**

43190. "A small-grained variety with pearl-gray hulls."

43191. "A variety with slightly larger grains than those of the preceding and with reddish brown hulls."

43192. Phaseolus lunatus L. Fabaceæ. **Lima bean.**

"*Brosa* bean."

43193. Sesamum orientale L. Pedaliaceæ. **Sesame.**
(*Sesamum indicum* L.)

"Bennin."

43194. Vigna sinensis (Torner) Savi. Fabaceæ. **Cowpea.**

"Small white bean."

43195 to 43201. Rubus strigosus Michx. Rosaceæ. **Raspberry.**

From Canada. Collected by Mr. M. J. Dorsey, University of Minnesota, St. Paul. Received August 17, 1916. Quoted notes by Mr. Dorsey.

"Raspberries carefully selected from plants bearing berries of the best type for the species in the region around Lake Winnipeg and the Riding Mountains in Canada for the purpose of securing the wild raspberry for breeding purposes in the northern United States. This species grows abundantly and is generally distributed in the localities visited in Manitoba. It is quite similar in appearance in its northern range to that in the northern part of Minnesota, where I have had the opportunity to observe it quite extensively in the wilds, especially in the region of the Red Lakes, Grand Rapids, Cloquet, Mille Lac, etc.

"It seemed from the preliminary survey of the field that it would be best to visit the localities on the edge of the granite area extending in a northerly direction about 60 miles east of Winnipeg, as well as the region of the Riding Mountains. The granite area was visited at points around Lac du Bonnet, the Winnipeg River, and the Pinawa River. From these points on the margin of the granite area in the east I proceeded to the west from Winnipeg to the Riding Mountains. Here *Rubus strigosus* grew generally along ditches and roads and in the burned-over areas of the foothills.

"In the eastern region the raspberries were on the whole bearing more abundantly than those in the west at the Riding Mountains. The isothermal lines extend considerably northward in this region, so it seems to me from the progress of the season and the nature of the vegetation that perhaps all told the selections in the East on the granite area were from stock subjected to harder weather conditions than in the West. Of course, in this part of Canada when winter sets in it is quite constant, and there is generally snow enough to cover raspberries growing in the wild. For this reason there may be an extension of the species northward, owing to its natural protection rather than to its ability to withstand cold."

43195. "From Lac du Bonnet, Manitoba, July 30, 1916. Some splendid types were found in this locality, especially where land had been cleared or burned over recently."

43196. "From Pinawa River, Manitoba, July 31, 1916. From the granite area; some splendid types were found in this area, especially where the land had been cleared or burned over recently."

43197. "From Big George Island, Lake Winnipeg, Manitoba, August 5, 1916. A fishing station is located on Big George Island, which is occupied for the most part by Indians during the summer and vacated during the winter. There are large open areas on the eastern shore where I found the best raspberries of the whole trip. Plants more than 5 feet tall were numerous in the cleared area around the fisheries. They were bearing heavily and the Indians were just beginning to pick. The opportunity for selection here was good. The increased size of the plants was undoubtedly due to the better growing conditions of a water-bounded locality."

43198. "From Little Bull Head, Lake Winnipeg, Manitoba, August 6, 1916. Nearly 100 miles northwest of Lac du Bonnet, on the west shore of the lake. The plants in this region were growing in open areas in the woods and were, in small patches, equal to the best I found in the locality of Lac du Bonnet. The ground for the most part around there was low and quite swampy, so that all told I did not consider the region as favorable as Lac du Bonnet, considering the area which could be covered."

43195 to 43201—Continued.

43199. "From McCreary, Manitoba, August 7, 1916. In the region of Riding Mountains the land was rolling, and the soil was of the black prairie type, underlain with clay and gravel. There were plants enough, so one could search through wide areas and select from large numbers, and I chose what the local authorities considered the best areas."

43200. "From Dauphin, Manitoba, August 8, 1916. In the region of Riding Mountains the land was rolling, with typical black prairie soil underlain with clay and gravel. Selections were made over a wide area."

43201. "From Erickson, Manitoba, August 9, 1916. The land at Erickson was more rolling than at McCreary and Dauphin, and the soil was of the same black type, underlain with clay and gravel. Selections were made over a large area."

43202 to 43212. PRUNUS NIGRA Ait. Amygdalaceæ.

Canada plum.

From Winnipeg, Canada. Presented by Prof. F. W. Broderick, Manitoba Agricultural College. Received August 21, 1916. Cuttings of the following; quoted notes by Prof. Broderick.

Hardy selected plums from Manitoba. Stock selected from the original collection that Mr. Buchanen made from all parts of the Province and which are now being grown by Prof. Broderick at the Manitoba Agricultural College.

43202. "No. 24. Very early, large size, good quality."

43203. "No. 26. Early, medium size, good quality."

43204. "No. 35. Early, medium size, fair to good quality."

43205. "No. 40. Medium early, medium size, good quality."

43206. "No. 44. Early, large size, good quality."

43207. "No. 50. Early, large size, good quality."

43208. "Row 3, tree 4."

43209. "Row 31, tree 10."

43210. "Row 3, tree 17."

43211. "Row 3, tree 22."

43212. "Row 1, tree 28."

43213. FEVILLEA CORDIFOLIA L. Cucurbitaceæ. **Sequa.**

From San Jose, Costa Rica. Presented by Mr. J. E. van der Laat, Director of Agriculture. Received August 14, 1916.

"The *sequa*, or *cacoon antidote*, of Jamaica, where it is a common plant in shady woods, climbing to great height up the trunks of trees. The fruits are 4 or 5 inches in diameter and contain from 12 to 15 large flat seeds which possess purgative and emetic properties and have an intensely bitter taste. In Jamaica the negroes employ them as a remedy in a variety of diseases and consider them an antidote against the effects of poison; they also obtain a large quantity of semisolid fatty oil, which is liberated by pressure and by boiling them in water." (*Lindley, Treasury of Botany, pt. 1, p. 491.*)

43214. ULMUS FOLIACEA SUBEROSA (Moench.) Rehder. Ulmaceæ.

Elm.

From Kief, Russia. Procured through Messrs. St. Przedpelski and T. Antoniewicz. Received August 15, 1916.

"*Cork-barked* elm. Like the type in leaf, but of stiff, spreading, low habit, the branches 2 or more years old becoming furnished with usually four conspicuous corky ridges. It has to be noticed, however, that the corkiness of the branches is often noticeable in a greater or less degree in what we regard as the typical *Ulmus nitens*, and if seeds of the most suberous tree were sown, it is probable that there would appear many ordinary *U. nitens* among them. Common in forests of central Europe." (*Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 618.*)

Received as *Ulmus turkestanica*, which is recognized by Rehder as a form of *U. foliacea suberosa*.

43215. DIOSPYROS TUPRU Buch.-Ham. Diospyraceæ.

From Poona, India. Presented by Mr. P. C. Patit, Acting Deputy Director of Agriculture. Received August 7, 1916.

A tree of small, moderate, or large size, up to 60 to 80 feet high; diœcious or polygamous; the heartwood is black in some trees and of a hard and heavy substance called at Munghur *Batti* and at Saseram *Abnus*. The latter word is said to be of Persian origin and a source from which our word *ebony* is derived. Trunk gray-black; alternate or opposite, ramified as in the oak. Leaves bright green, 3 to 14 inches long by 1½ to 7½ inches wide. Pistillate flowers three or four, white, one-third to five-twelfths of an inch long; staminate flowers solitary. Fruit egg shaped or globose, about 1 inch long by three-fourths of an inch thick; fruiting calyx surrounding the base of the fruit or spreading. The fruit when ripe is sweet and not very bad to the taste. This valuable tree sheds all its leaves in the cold season, and they appear again in the beginning of the hot weather (Beddome); not uncommon in the Cuddapah, Salem, and Kurnool forests in Madras. (Adapted from *Hiern, Transactions of the Cambridge Philosophical Society, vol. 12, pt. 1, pp. 158–159.*)

43216 and 43217.

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture. Received August 21, 1916.

43216. MANGIFERA INDICA L. Anacardiaceæ. Mango.

"*Carabao.* This variety is a native of the Philippines and is without a doubt the best mango fruit I have ever eaten. It is indigenous all over the islands, principally found growing along the walls of the rice paddies. Rarely cultivated in orchard form." (*H. H. Boyle.*)

See S. P. I. 38390 for a previous introduction.

43217. SYZYGIUM CUMINI (L.) Skeels. Myrtaceæ. Jambolan.
(*Eugenia jambolana* Lam.)

"A small evergreen tree met with throughout India and Burma, ascending the hills to about 6,000 feet. It is chiefly found along river beds and is especially cultivated for its fruit in gardens and in avenues. There are several varieties that yield much better flavored fruit than others, but as a rule it is astringent and only serviceable when cooked in tarts and puddings. In Goa a wine is prepared from it, and a spirit (*jambava*) is spoken of by recent Sanskrit authors as distilled from the *jambu*. Some years ago brandy was made at Monghyr from the fermented fruit. The *jambu* is extensively used all over India in the manufacture of vinegar. The tasar silkworm is said to feed on the leaves of the tree. The timber is fairly durable and is largely employed for building purposes, for agricultural implements, and for well work, since it resists the action of

43216 and 43217—Continued.

water. It gives a good fuel. The *jambu* is one of the trees held in veneration by the Buddhists and is often placed near the Hindu temples because regarded as sacred to Krishna." (*Watt, Commercial Products of India, p. 526.*)

43218 and 43219.

From Africa. Presented by Rev. C. W. Guinter, Sudan United Mission, Northern Nigeria. Received August 11, 1916.

43218. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

43219. VOANDZEIA SUBTERRANEA (L.) Thouars. Fabaceæ. **Bambarra ground nut.**

"It is somewhat similar to the ordinary ground nut or peanut (*Arachis hypogaea*), but its development of leaves is less abundant; it affords a smaller amount of vegetable matter after it has been harvested, and its cultivation improves the soil to a smaller extent than that of the ground nut. None the less, it is claimed that the cultivation of this plant deserves extension, because it is capable of furnishing useful quantities of nutritious material and because the digging of the nuts is conducted in a far easier and cheaper manner than that of ground nuts." (Extracted from *The Agricultural News, Oct. 29, 1910.*)

43220. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From San Jose, Costa Rica. Presented by Mr. José C. Zeledón, through Mr. O. F. Cook, of the Bureau of Plant Industry. Received August 28, 1916.

"Chayote without fiber; that is, the seed is not inclosed in the usual fibrous bag." (*Zeledón.*)

43221. ORYZA SATIVA L. Poaceæ. **Rice.**

From Africa. Presented by Rev. C. W. Guinter, Sudan United Mission, Northern Nigeria. Received August 11, 1916.

A red-grained form.

43222. VITIS VINIFERA L. Vitaceæ. **Grape.**

From Sydney, New South Wales, Australia. Cuttings presented by Mr. George Valder, undersecretary and director, Department of Agriculture. Received August 30, 1916.

"*Centennial.* This variety is a shy cropper and is inclined to do best in a warm climate, more particularly under irrigation. It is supposed to be a seedling of *Gordo Blanco* and was raised in the first place many years ago by a Mr. Knight, of Bendigo, Victoria." (*Valder.*)

43223. ANANAS SATIVUS Schult. f. Bromeliaceæ. **Pineapple.**

From Barbados, British West Indies. Suckers presented by Mr. Francis Watts, Commissioner of Agriculture for the West Indies. Received August 30, 1916.

"A variety of pineapple obtained from Grenada, concerning which, however, little is known locally. The fruits, which I have seen, somewhat resemble the *Red Spanish* in general shape and appearance, but are somewhat paler in color. The fruit, though somewhat acid, has a fair flavor." (*Watts.*)

43224 to 43226. MANGIFERA INDICA L. Anacardiaceæ. Mango.

From Mexico. Presented by Mr. Frank W. Moore, British vice consul, La Paz, Lower California, Mexico. Received August 29, 1916.

This material was sent in reply to our request for seeds of especially good mangos reported by the United States consul at Mazatlan, Mexico, as growing in the Arroyo de Leon, near La Paz, Lower California, and probably obtainable through the British vice consul at that place.

43224. From Triunfo, near La Paz.

43225. From La Paz.

43226. From Arroyo de Leon, near La Paz.

43227. HYDNOCARPUS KURZII (King) Warb. Flacourtiaceæ.
(*Taraktogenos kurzii* King.) Kalanzo.

From Calcutta, India. Purchased from Messrs. Smith, Stanistreet & Co., through Mr. James A. Smith, American consul general. Numbered September 6, 1916.

A large tree, 40 to 50 feet high, from the forests of Sylhet, Chittagong, and Burma. The seeds yield the true chaulmoogra oil, which has recently come into prominence through its remarkable curative effects on leprosy when applied locally and internally.

Dr. Victor G. Heiser, in concluding an article on "Leprosy—Its Treatment in the Philippine Islands by the Hypodermic Use of Chaulmoogra Oil Mixture" (*Am. Journ. Tropical Diseases and Preventive Medicine, vol. 2, p. 300, 1914*), says in part:

"The present stage of the development of the treatment herein described does not warrant a claim that anything like a specific for leprosy has been found, but experience does show that it gives more consistently favorable results than any other that has come to our attention, and it holds out the hope that further improvement may be brought about. It produces apparent cures in some cases, causes great improvement in many others, and arrests the progress of the disease in almost every instance."

43228. VICIA FABA L. Fabaceæ. Broad bean.

From La Paz, Bolivia. Presented by Mr. John D. O'Rear, United States Minister. Numbered September 20, 1916.

"The only variety of broad bean that is cultivated in this country. The bean is produced very successfully here, especially in the high altitudes, and constitutes one of the principal articles of diet of the Indians of the Altiplano, who use it in roasted form. It is also used widely as a table food, being of very good quality, and when properly prepared it provides a very wholesome and delicious dish. These seeds are dried in the same form as that used by the natives for preserving the seed from one season to another and will have to be soaked in water for two or three days before planting." (*O'Rear.*)

43229 to 43232. VICIA FABA L. Fabaceæ. Broad bean.

From India. Presented by Mr. J. MacKenna, Agricultural Adviser to the Government of India, Pusa, who obtained them through the superintendent of the Kumaun Government Gardens. Received August 29, 1916. Quoted notes by Mr. MacKenna.

"Of the higher Himalayan forms."

43229. "No. 1. Long podded."

43230. "No. 2. Long podded."

43231. "No. 3. Broad podded."

43232. "No. 4. Broad podded."

43233 to 43236.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received August 29, 1916. Quoted notes by Dr. Proschowsky.

43233. LITHRAEA MOLLEOIDES (Vell.) Engl. Anacardiaceæ.
(*L. aroeirinha* L. Marchand.)

"Bush or small tree, very resistant to drought; evergreen glossy foliage; quite hardy here."

43234. OREOPANAX NYMPHAEIFOLIUM Hort. Araliaceæ.

"Splendid large bush or tree with very large, glossy leaves; quite hardy here."

43235. PODACHAENIUM EMINENS (Lag.) Schultz Bip. Asteraceæ.
(*P. paniculatum* Benth.)

"Very quick growing. Becomes in a few years a small tree; large evergreen leaves; large panicles of white flowers. Naturalized in my garden."

43236. SEMELE ANDROGYNA (L.) Kunth. Convalleriaceæ.

"A very beautiful climber; splendid foliage; red ornamental berries; evergreen; hardy here; reaches 15 meters in length."

43237. CARICA PAPAYA L. Papayaceæ. **Papaya.**

From the city of Guatemala, Guatemala. Presented by Mr. D. O'Brien. Received September 1, 1916.

"The tree grows well at an altitude of 1,000 to 3,000 feet in these countries, but we have no frost within the height specified. The fruit is delicate and bruises easily. The trees grow best in arid regions where there is very little rainfall. They grow wild, none having been cultivated. The fruit contains pepsin, which I believe could be extracted for medicinal purposes. Fruit could be placed on the market when other fruits are not in season, say during the months of November to January." (*O'Brien.*)

43238. BUTIA CAPITATA PULPOSA (Barb.-Rodr.) Becc. Phœnicaceæ. **Palm.**

From Fruitland Park, Fla. Presented by Mr. Louis Bosanquet. Received August 28, 1916.

"The *Entre Rios* palm, the most massive of all the species, almost rivaling in this respect the Canary Island date, though the leaves are much shorter. In mature specimens the trunk is about 30 feet high. I have a few fine photographs of these palms, said to have been taken by Dr. G. Niederlein in the Missiones, Argentina, which exhibit quite large dense forests of tall specimens growing in rather rocky and stony soil. I have only one specimen now, about 15 feet high with a very thick and massive trunk about 7 feet high. Ferns (*Phlebodium aureum*) grow all around it in dense masses and form a beautiful decoration on the rough stem, which is still provided with the old leaf bases. The magnificent crown of stout, almost upright leaves, overtopping the sturdy trunk, makes the specimen an exceedingly stately one. Each year it matures about eight to nine fruit bunches, weighing from 35 to 50 pounds each. Each fruit, of a light orange color, is as large as a plum, very rich in sugar, juicy, intensely fragrant, like a combination of banana and pineapple, and edible. The fruits are as closely set as a bunch of grapes. I have counted over 1,000 in one cluster. The large divided flower scape is inclosed in a very massive spathe of the size and form of a baseball club, or, as a visitor expressed himself, of a 'huge Hercules club.' Excellent wine, jam, and jelly can be made of the fruits. The tree grows freely in rich, dry pine-land soil and, like all the other species of this group, it does not seem to require much attention. To Mr. Theo. L. Mead belongs the credit of having introduced this palm into cultivation, but I think his specimens on rich moist land all have perished. It is perfectly hardy and should be grown everywhere in the State and all along the Gulf coast where the soil is suitable." (*H. Nehrling, Transactions of the Florida State Horticultural Society, vol. 22, p. 156* (*1909*), under *Cocos datil.*)

43239 to 43242.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison. Received August 30, 1916.

43239. CHAETOCHLOA NIGRIROSTRIS (Nees) Skeels. Poaceæ. **Grass.**
(*Setaria nigrirostris* Dur. and Schinz.)

A hardy tufted grass which has made good growth. Although the leaves are a little hard, there is a very large quantity in proportion to the stem; the grass appears to be a quick succulent grower, carries a good quantity of seed, and grows well in New South Wales. (Adapted from *E. Breakwell, Agricultural Gazette, New South Wales, Feb. 2, 1916.*)

43240. BRACHIARIA BRIZANTHA (Hochst.) Stapf. Poaceæ. **Grass.**
(*Panicum brizanthum* Hochst.)

"This grass is a native of the Transvaal bush veldt. Capt. W. H. F. Hughes, of Zeerust, writes that it grows well on the poorest sandy soil and that cattle are very fond of it. The only previous record we have of its value as a pasture grass is a note from a farmer near Salisbury, Rhodesia, stating that it is eaten by cattle there. We have no record of any vernacular name by which this grass is known." (*J. Burtt Davy, Agricultural Journal, Union of South Africa, vol. 1, No. 5, p. 706, June, 1911.*)

43241. PENNISETUM PURPUREUM Schum. Poaceæ. **Grass.**

"The great value of prolific and drought-resistant fodder plants, which are generally very difficult to procure, is well known to stock owners, and the above variety, which as yet is but little known, can be most highly commended for both of these qualities. With me last season, which was a very dry one and which was a most disastrous one for stock, this grass grew to the height of nearly 11 feet and produced a large quantity of succulent, nutritious, and fattening fodder, which is greatly relished by the stock and is, according to analysis, much richer than green maize. A reliable official says: 'There is a consensus of opinion that in this plant we have found a fodder of great value, which remains green even during such long periods as from six to eight months when other herbage is parched up or destroyed.' It grows rapidly to a height of 12 feet or more in favorable weather, thrives well in various soils, and resists both frost and drought to a remarkable extent. At 7 feet high it has produced 12 tons of green fodder per acre, and a few months later 15 tons, making a total yield of 27 tons per acre. It is everlasting when once established, and the tufts or stems increase in size after each cutting or when grazed off. It should prove of untold value to farmers in South Africa, who suffer much loss through frequent and protracted droughts, in the East Indies, and in other countries where a light rainfall and semiarid conditions prevail. As a prolific and drought-resistant plant it promises to prove one of the very best brought into cultivation." (*Harrison.*)

43239 to 43242—Continued.

43242. Sporobolus indicus (L.) R. Br. Poaceæ. **Grass.**

A fine, open pasture grass, found through Australia, variously called *rat-tail* grass, *Chilean* grass, and, by the aborigines, *jil-crow-a-berry.* Its numerous penetrating roots enable it to resist severe drought. It yields a fair amount of fodder, is relished by stock, but is too coarse for sheep; the seeds form the principal food of many small birds. It has been suggested as a paper-making material. (Adapted from *Maiden, Useful Native Plants of Australia, p. 109.*)

43243. Capparis micracantha DC. Capparidaceæ.

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture. Received September 6, 1916.

"Seeds of a native fruit known locally as *Cambagat.* This fruit is about the size of a plum, bright red in color, and has an exceedingly fine flavor, somewhat similar to a guava." (*Hernandez.*)

43244 to 43252. Triticum spp. Poaceæ. **Wheat.**

From Athens, Greece. Presented by the director of the Royal Agricultural Society. Received September 1, 1916.

43244. Triticum monococcum L.

Var. *Trimini* (Greek). Spring wheat.

43245 to 43249. Triticum durum Desf.

43245. Var. *Mavraani* (Greek). Thessaly wheat.

43246. Var. *Rapsani* (Greek). Thessaly wheat.

43247. Var. *Deves* (Greek). Humidity-resisting Thessaly wheat.

43248. Var. *Deves* (Greek). Thessaly wheat.

43249. Var. *Deves* (Greek). Thessaly wheat of the plains.

43250 and 43251. Triticum aestivum L.
(*Triticum vulgare* Vill.)

43250. Thessaly wheat of mountainous regions.

43251. Var. *Lapsista.* Macedonia wheat.

43252. Triticum durum Desf.

Var. *Contoarnaouti* (Greek). Thessaly wheat.

43253 to 43257.

From Colombia. Seeds collected by Mr. H. M. Curran. Received June 24, 1916. Numbered September 11, 1916. Quoted notes by Mr. Curran except as otherwise indicated.

43253. Annona marcgravii Mart. Annonaceæ.

"Probably seed of large-fruited anona."

A tree with the trunk, form of the branches, and color of the bark resembling those of an orange, but with different leaves, flowers, and fruit. Its leaves are about 6 inches long, deep green and glossy above, pale green beneath, and tongue shaped. The entirely yellow flower is large and conspicuous, has a sickening sweet odor, and is deciduous. It is followed by the fruit, which ripens in December and January. This fruit, which is conoid in shape and about 5 inches in its greatest diam-

43253 to 43257—Continued.

eter, is green and white mixed or pale green on the outside, and the surface is areoled, with a brown tubercle on each areola. Not until the fruit falls of its own accord is it eaten, and then it is soft, so that it can be peeled with the fingers. The yellowish pulp has an odor like fermented bread dough to which honey has been added, with a sweetish subacid and somewhat bitter taste. The seeds are oval, golden yellow, glossy, smooth, and hard. This tree is a native of Brazil and Venezuela. (Adapted from *Safford, Contributions from the National Herbarium, vol. 18, pt. 1, pp. 25 to 28,* and from *Piso and Marcgrave's description of araticú ponhê, in 1648.*)

43254. CASSIA sp. Cæsalpiniaceæ.

"Ornamental yellow-flowered shrub in low lands. San Martin de Loba, April 16, 1916."

43255. GEONOMA sp. Phœnicaceæ. **Palm.**

"*Cecilia* palm. Low, very ornamental, Tierras de Loba, Bolivar."

43256 and 43257. MALVAVISCUS sp. Malvaceæ.

43256. "Low annual, with red flowers, very ornamental, Tierras de Loba, Bolivar. Cultivated also in the Philippine Islands."

43257. "Ornamental, Tierras de Loba."

43258. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. **Yang-tao.**

Plants grown from cuttings sent to the Plant Introduction Field Station, Chico, Calif., by Mr. D. W. Coolidge, Pasadena, and grafted on seedlings of S. P. I. No. 21781. Numbered for convenience in recording distribution.

"The *yang-tao*, a deciduous climber native to Szechwan Province, China, has attracted considerable attention because of the high quality of its fruits and the ornamental value of the plant. The leaves have a plushlike texture and an unusual dark-green color, while their regular spacing and their large size add to the beauty of the vine. The flowers are buff yellow to white, fragrant, often 1½ inches across, and are produced in great abundance. The fruits are ovoid to globose and about 2 inches long. The outside is russet brown and is clothed with villous hairs. The flesh is green, of most excellent flavor, resembling that of a gooseberry, but tempered with a flavor peculiarly its own. The fruit is excellent when fresh and also makes very fine jam and sauce." (*Fairchild.*)

43259. CORDIA sp. Boraginaceæ.

From Guayaquil, Ecuador. Presented by Mr. Frederick W. Goding, American consul general. Received September 5, 1916.

43260. CORDEAUXIA EDULIS Hemsl. Cæsalpiniaceæ. **Yeheb nut.**

From Aden, Arabia. Presented by Mr. A. G. Watson, American vice consul, who obtained the nuts from the Acting Governor of Italian Somaliland at Mogadiscio. Numbered September 12, 1916.

The yeheb is a tree or shrub which has recently been discovered in Italian Somaliland, East Africa. Its seeds, called nuts, have a high food value, containing 21 per cent of cane sugar, 2 per cent of reducing sugars, 13 per cent of proteids, and 37 per cent of carbohydrates. They form an article of commerce and are brought to the coast by caravans and are eaten by the native Dolbahanta Somalis in preference to rice and dates. Though the climate of Somaliland is not well known, the indications are that where this plant grows, long periods of drought occur, but rains are abundant and regular at certain seasons of the year. Winter temperatures probably do not go below freezing. The plant quickly forms a long taproot, bears when only 4 feet high, has evergreen leaves, which if crushed stain the fingers a magenta color, and grows into a large tree. From the investigations which have been made by the Kew Botanic Gardens the indications are that this plant is worthy of a thorough trial in the arid Southwest, at first in the practically frostless areas, and a special effort is being made to get a large enough quantity of the seeds for an extensive experiment. (See *Kew Bulletin, 1908, pp. 36–44, 141.*)

43261 and 43262.

From Lawang, Java. Presented by Mr. M. Buysman. Received September 6, 1916.

43261. Carica papaya L. Papayaceæ. **Papaya.**

"Seeds of a very large papaya fruit, measuring 40 cm. in length and 16 cm. in diameter; the natives say there are fruits of 50 cm., but I have never seen them." (*Buysman.*)

43262. Meibomia gyrans (L. f.) Kuntze. Fabaceæ. **Telegraph plant.**
(*Desmodium gyrans* DC.)

"Flowers and fructifies here as if it were indigenous." (*Buysman.*)

An erect, short-lived woody plant known as gorachand, native of moist districts, such as northern Bengal. In moist weather, when the sap is active, a jerky motion of the leaflets, like that of a semaphore, is observed. It is propagated by seed, which should be sown at the beginning of the rainy season and watered when dry. (Adapted from *Woodrow, Gardening in the Tropics, p. 247.*)

"Because of its remarkably sensitive stipules, which gyrate, it has become one of the most valuable of plants for plant physiological investigations. Those of Dr. Chundu Bose are among the most instructive. It can be grown out of doors in the summer in Washington." (*Fairchild.*)

Mentioned as a fodder plant in *Macmillan, Handbook of Tropical Gardening and Planting, p. 591.*

43263 to 43268.

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture. Received September 1, 1916.

43263. Annona cherimola × squamosa. Annonaceæ. **Atemoya.**

Plants very similar in appearance to the cherimoya; the fruit is small, about 10 ounces in weight, yellowish green, with very thick, tough skin and white tender flesh, juicy, subacid. It has four to seven seeds, darker colored than those of the cherimoya. (Adapted from *Wester, Philippine Agricultural Review, p. 71, Feb., 1914.*)

43264. Annona glabra L. Annonaceæ. **Pond-apple.**

"Known as *Anona* in Mexico; *Cachiman creme* in the French West Indies; *pond-apple* in Florida and the West Indies. Vigorous tree, up to 30 feet in height, the trunk 2 feet in diameter. Leaves ovate-lanceolate, deep green above, pale green beneath, glabrous, persistent. Fruit ovate-conical in shape, 2¼ inches long; skin yellowish, sometimes reddish; seeds conical, few. Pulp of a buttery consistency, very sweet, sometimes cloying. Prof. Foex says this is the commonest fruit on the Mexican market (Mexico City) with the exception of the cherimoya. It is not highly

43263 to 43268—Continued.

valued in Florida and is not as hardy as the cherimoya." (*W. Popenoe, Journal of Economic Botany, Pomona College, 1912, p. 296.*)

43265. Annona montana Macfad. Annonaceæ.

"Native of Porto Rico and other islands of the West Indies. A small tree, bearing a subglobose, muricate fruit of little value. Introduced into Florida by the Bureau of Plant Industry for trial as a stock for other Annonas." (*W. Popenoe, Journal of Economic Botany, Pomona College, 1912, pp. 296 and 297.*)

"Tree 15 meters high, leaves dark green and very glossy, as though varnished, flowers like those of *Annona muricata*, fruit subglobose, about the size of an orange, pulp white at first, turning yellowish when ripe, seeds yellow or tan colored. Along streams in the mountains usually, but sometimes at sea level." (*Safford, Contributions from the National Herbarium, vol. 18, p. 22, 1914.*)

43266. Trichosanthes quinquangulata A. Gray. Cucurbitaceæ.

An extensively climbing vine with a smooth-angled stem and 5-lobed membranaceous leaves. The flowers occur in racemes. The native habitat of this plant is in the Mangsi Islands, in the Sulu Sea. (Adapted from *Gray, Botany U. S. Exploring Expedition, vol. 1, p. 645.*)

43267. Uvaria rufa (Dunal) Blume. Annonaceæ. **Banauac.**

The fruits of this plant, which is also known as *Susong calabao*, occur in bunches of 18 to 20, are kidney shaped, bright red, and pubescent, with a thin brittle skin and scant, whitish, juicy subacid flesh and many seeds. Ripens in September. (Adapted from *P. J. Wester, Philippine Agricultural Review, vol. 6, no. 7, July, 1913.*)

43268. Vernonia vidalii Merr. Asteraceæ. **Malasambon.**
(*V. arborea vestita* Vidal.)

A small tree, 8 to 10 meters high, with the pale-purple inflorescence and the lower surface of the leaves covered with short hairs which under the lens appear pale yellowish white and very dense. Found in the district of Morong. (Adapted from *Vidal, Revision Plantas Filipinus, p. 160.*)

43269 to 43272.

From Bariloche, Argentina. Presented by Dr. Joseph Vereertbrugghen. Received September 2, 1916.

43269. Chusquea quila Kunth. Poaceæ. **Bamboo.**

A freely branching arborescent plant with the numerous open panicles at the joints. The leaves are distinct and scarcely half an inch wide. It is a native of Chile. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, p. 449.*)

43270. Embothrium coccineum Forst. Proteaceæ. **Notro.**

"*Randal.* This is a beautiful tree and is giving wood that, here on the spot, is sold by the square inch. It is rather like hazelnut, perhaps nicer." (*Vereertbrugghen.*)

43271. Lithraea molleoides (Vell.) Engl. Anacardiaceæ.
(*L. aroeirinha* L. Marchand.)

An evergreen shrub, native of southern Brazil and Argentina, with a height of about 12 feet. The leaves are odd-pinnate, with five leaflets, or

43269 to 43272—Continued.

rarely three, and the flowers occur in panicles 2 to 3 inches long. The fruit is round, about a fifth of an inch across, and of a lustrous whiteness. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1894.*)

43272. MAYTENUS BOARIA Molina. Celastraceæ. **Mayten.**

A handsome evergreen shrub, growing to a height of 6 feet, with very smooth, ovate-lanceolate leaves and small flowers in axils. The native country is Chile, where it is quite common, flowering in May. In England it succeeds best trained to the front of the south wall, but survives the winter without even the slightest protection. Perfectly hardy in California as far north as San Francisco and highly valued for ornamental planting; recommended for street and avenue planting; timber exceedingly hard. It is propagated readily from seeds or from suckers. (Adapted from *Edwards's Botanical Register, vol. 20, pl. 1702,* and *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2017.*)

43273 to 43280. CICER ARIETINUM L. Fabaceæ. **Chick-pea.**

From Seville, Spain. Presented by Mr. Wilbur T. Gracey, American consul, who secured the seeds from Mr. Juan Mateo Gimenze. Received September 1, 1916.

"Chick-peas, or, as they are called in Spain, *garbanzos,* are one of the principal food products of that country, and may be said to be the staple food of the poorer classes. The plant, *Cicer arietinum,* is a species of the bean family largely grown around the Mediterranean regions and in central Asia. The seed, which is considerably larger than a pea, is encased in short, thick, hairy pods, and forms, when roasted, the parched pulse of the East, and for this reason is sometimes known as the *Egyptian pea.* Chick-peas seem to thrive best in more or less arid regions, and for that reason the soil in the Seville consular district seems to be particularly suitable, owing to the intense heat and dryness of the summer months, and this district, which comprises the Provinces of Seville, Cordoba, Cadiz, Huelva, Badajoz, and Caceres, produces over half of the chick-peas grown in Spain. In that territory the sowing is generally done in the month of March, and the crops are usually collected when the plants are perfectly dry, at the beginning of August. It is said, however, that this practice is not to be recommended, as chick-peas which dry in the pods before being cut become exceptionally hard and are difficult to cook, as is not the case if they are collected when the plants become somewhat yellow, before they are absolutely dry, and then are piled in small heaps and left to dry in a granary or well-aired room." (*Gracey.*)

43273. White, hard, from 50 to 52 peas in 30 grams.

43274. White, hard, from 70 to 75 peas in 30 grams.

43275. White, soft, from 50 to 52 peas in 30 grams.

43276. White, soft, from 60 to 65 peas in 30 grams.

43277. Tawny, soft, from 51 to 53 peas in 30 grams.

43278. Tawny, soft, from 60 to 65 peas in 30 grams.

43279. Tawny, soft, from 50 to 52 peas in 30 grams.

43280. Tawny, soft, from 60 to 65 peas in 30 grams.

For an illustration showing a few varieties of chick-peas, see Plate IV.

43281 and 43282.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens. Received August 17, 1916.

43281. NANNORRHOPS RITCHIEANA (Griffith) Wendl. Phœnicaceæ. **Mazri palm.**

A low gregarious shrub, ascending to 5,500 feet in Baluchistan and Mekran, stemless ordinarily, but sometimes with a stem 10 to 20 feet long. The leaves are 2 to 4 feet long, grayish green in color, and are beaten with a mallet to remove the fiber, which is used in making mats, baskets, etc. The fruit is a nearly round 1-seeded drupe. The flowers, leaf buds, and fruits are eaten by the natives, and the seeds are made into rosaries. The reddish brown wool of the petioles is impregnated with saltpeter and used as a tinder for matchlocks, and the whole plant when dried is used for fuel in arid regions. In Europe it grows best in a compost of sandy loam, with good drainage, and is propagated by seeds and offsets. An unheated greenhouse is better than a hothouse. (Adapted from *E. Blatter, Journ. Bombay Nat. Hist. Soc., vol. 21, pp. 72 to 76.*)

43282. PROSOPIS SPICIGERA L. Mimosaceæ.

A deciduous thorny tree, found in the arid zones of the Punjab, Sind, Dekkan, etc. It is easily raised from seed and coppices well. The taproot is enormously long, in one specimen measuring 86 feet. From the stump of the pruned branches and other scars a gum exudes, similar to gum arabic, which, although worthy of investigation, has not hitherto been used. The bark of the tree is used for tanning. The pods are sometimes used for medicinal purposes, but more often are employed as fodder, and in some localities the poorer classes eat the bark. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, pp. 340 and 341.*)

43283. ROSA RUBUS Lev. and Van. Rosaceæ. **Rose.**

From Cheshunt, Hertfordshire, England. Plants purchased from Messrs. Paul & Son. Received September 13, 1916.

Wilson No. 666a.

A tall, climbing musk rose, up to 6 meters in height, common everywhere in western Hupeh and eastern Szechwan, China, with densely hairy shoots and leaves and large coarsely dentate leaflets, resembling those of certain species of Rubus. The fruit is dull red or dark scarlet, globose, and the peduncles are relatively long and stout. The plant grows up to 1,800 meters altitude. It was first described as *Rosa moschata hupehensis* Pampanini. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, pt. 2, pp. 308 and 309.*)

43284. LITCHI CHINENSIS Sonner. Sapindaceæ. **Litchi.**

(*Nephelium litchi* Cambess.)

From Canton, China. Presented by Mr. G. Weidman Groff, Canton Christian College, through Mr. Lau Tai Chi. Received September 5, 1916.

Wai chi variety.

43285. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Singapore, Straits Settlements. Presented by Mr. J. I. Anderson, director, Botanic Gardens. Received September 12, 1916.

One of the most delicious fruits of the Tropics. The handsome tree is 25 to 30 feet in height, of compact growth, regular in outline, and with dark-green foliage. It comes into bearing at about the ninth year. The rose-pink flowers are 1½ inches across, and there are two blooming periods each year. The round fruits, about the size of a mandarin orange, are borne from buds produced near the tips of short branches, mainly on the outside of the tree. The rind is thick and the flesh divided into segments much like the orange. The texture resembles a well-ripened plum, and the taste is delicious. In the East Indies it is planted by the natives as a dooryard tree. It is very hard to establish the young trees, which accounts for the small plantings which have been made. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, pp. 1889 and 1890.*)

43286. CANAVALI OBTUSIFOLIUM (Lam.) DC. Fabaceæ.

From Durban, Natal, Union of South Africa. Presented by Mr. P. van de Bijl, mycologist, Natal Herbarium. Received September 12, 1916.

A creeping perennial bean, called *palang-palang, akan-kan-tasi*, etc., with trifoliolate leaves, and bright pink (sometimes white) flowers. The pods are oblong with a few chestnut-colored seeds, which, according to Maiden, are eaten after cooking by natives of Australia. This vine is widely distributed on tropical shores and is useful as a binder for loose sand. (Adapted from *Safford, Useful Plants of Guam, p. 211.*)

43287 and 43288.

From Darjiling, India. Presented by Mr. G. H. Cave, Lloyd Botanic Garden. Received September 11, 1916.

43287. DENDROCALAMUS HAMILTONII Nees and Arn. Poaceæ. **Bamboo.**

"A tall, freely growing bamboo. Used for building, water pipes, and other purposes locally." (*Cave.*)

This bamboo abounds at about 4,000 feet in the Himalayas, where it attains a height of 40 to 80 feet, with grayish white culms which are naked below and much branched above and which become dull green when old. The culm sheaths are long and stiff, up to 18 inches long on the lower part of large stems, are glabrous and shining within and rough and with scanty patches of brown, stiff hairs or glabrous without. The leaves are variable, up to 15 inches long, and the inflorescence is a huge, much-branched panicle. From this bamboo baskets and mats are made, and the young shoots are eaten as a vegetable. The plant is conspicuous for its bright purple-red flowers. (Adapted from *Gamble, Bambuseæ of British India, pp. 85 and 86.*)

43288. TOONA CILIATA Roemer. Meliaceæ. **Toon tree.**
(*Cedrela toona* Roxb.)

A large, rapidly growing deciduous tree, 50 to 80 feet high and sometimes 20 feet in diameter, growing chiefly near streams in tropical Himalayan regions; also at low altitudes in western and southern India. The wood obtained from this important timber tree is not eaten by white ants, is durable, and is not liable to warp. It is used for furniture, carvings, and cigar and tea boxes. The bark is used as a tonic, and the flowers are a source of red and yellow dye. The seeds, young shoots, and leaves are given to cattle as fodder. (Adapted from *Watt, Commercial Products of India, p. 290.*)

43289 to 43291. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Canton, China. Presented by Mr. P. H. Josselyn, American vice consul in charge. Received September 15, 1916.

"Chinese peach trees are grown for the most part in the northern Provinces, where the climate is cold. Those grown in Kwangtung Province are inferior in size, color, and flavor to those grown farther north. There are three species of peaches cultivated in this Province—viz, the sweet, the sour, and the bitter." (*F. D. Cheshire, American consul.*)

43289. "*Ying tsui* t'ao (*eagle's beak* peach). Very sweet, with a point resembling the beak of the eagle and having a hairy coat. It is grown mostly at Sunchuen, in the Panyu district; Pontang, in the Nanhai district; and also in the Fayun, Sanshui, and Tungkun districts." (*Josselyn.*)

43290. "*Ha mi* t'ao (*honey-flavored* peach). Very sweet, slightly round in shape; came originally from Manchuria. This peach is grown for the most part at Fati and Tungka and some other points in the Panyu district." (*Josselyn.*)

43291. "*Suan* t'ao (*sour* peach). Grown at various places in Canton, mostly in the hilly districts. Some are imported to Canton from the Shuikwan and Shuitung districts." (*Josselyn.*)

43292. FICUS HOOKERI Miquel. Moraceæ.

From Darjiling, India. Presented by Mr. G. H. Cave, Lloyd Botanic Garden, at the request of the superintendent of the Royal Botanic Garden, Sibpur, near Calcutta. Received September 15, 1916.

An entirely glabrous tree, with thinly coriaceous oval leaves up to 11 inches in length, and axillary, depressed, obovate fruits growing in pairs up to 1 inch in diameter when ripe. The fig is not common and ascends to 6,000 feet in Sikkim, the Himalaya Mountains, and the Khasi Hills, India. (Adapted from *King, Annals, Royal Botanic Garden, Calcutta, vol. 1, p. 36.*)

43293 to 43298.

From Bogota, Colombia. Presented by Mr. Jorge Ancizar. Received September 16, 1916.

43293. ANNONA CHERIMOLA Mill. Annonaceæ. **Cherimoya.**

"The principal fruit cultivated by the aboriginal inhabitants of western South America. Endemic in the Andes, and subtropical rather than tropical in its natural habitat. Fruit with an abundance of slightly acidulous pulp with a flavor somewhat like that of a pineapple. Recommended for planting in southern California in the foothills near the coast." (*Safford.*)

43294. CARICA CANDAMARCENSIS Hook. f. Papayaceæ.

"From cold climate." (*Ancizar.*)

"Mountain papaw. A small semiherbaceous tree with a crown of large coarse palmate leaves, native of Colombia and Ecuador, similar to the papaw of the low country, but with fruit only about one-fourth or one-sixth the size of that of the latter. It was introduced at Hakgala Gardens, Ceylon, in 1880, and is now commonly grown in hill gardens for the sake of its fruit, being often found in a seminaturalized state about up-country bungalows. The ovoid angular fruit is in season all the year round; though too acid to be used for dessert, it is very agreeable when stewed, and it can also be made into jam and preserves. When ripe the fruit has a pleasant applelike odor. Propagated by seed." (*Macmillan, Handbook of Tropical Gardening and Planting, p. 191.*)

43293 to 43298—Continued.

43295. Carica papaya L. Papayaceæ. **Papaya.**

"'From hot climate." (*Ancizar.*)

See S. P. I. Nos. 41147 and 43237 for previous introductions and description.

43296. Caryophyllus jambos (L.) Stokes. Myrtaceæ. **Rose-apple.**
(*Eugenia jambos* L.)

Pomarrosa.

"This fruit, if properly candied, is one of the finest for the purpose. The rose odor and flavor are remarkably pronounced, and it certainly deserves attention." (*Fairchild.*)

The rose-apple is a medium-sized tree, native of India. It is cultivated in southern Florida.

43297. Passiflora ligularis Juss. Passifloraceæ. **Sweet granadilla.**

"An egg-shaped fruit with parchmentlike shell filled with an abundance of sweet juice and many small seeds. Used in tropical America for making sherbets and ices, alone or with the addition of lemon juice or spices. Of easy culture in all the warm localities, growing in the form of a vine from trellises and arbors and desirable not only for its fruit but for its beautiful flowers." (*Safford.*)

43298. Passiflora maliformis L. Passifloraceæ. **Granadilla.**

"*Curubá.* Fruit defined spheroid, hard shelled. Suitable for packing. Pulp of fine flavor, used for making sherbets. The flowers are beautiful, variegated, and sweet scented, red and white, with blue corona filaments; involucre composed of three ovate-acute bracts joined at the base, larger than the flower itself. The shell of the fruit is sometimes so hard that it must be broken with a hammer. The inclosed pulp has a pleasant grapelike flavor and is used in making cooling drinks and sherbets." (*Safford.*)

43299 and 43300. Juniperus cedrus Webb. Pinaceæ. **Juniper.**

From Teneriffe, Canary Islands. Presented by Dr. George V. Perez. Received September 15, 1916. Quoted notes by Dr. Perez.

43299. "A very small one from our island of Palma."

43300. "A very large one from Teneriffe."

43301 to 43329.

From Russia. Presented by Mr. W. P. Kotchetkov, Russian Government Agricultural Agency, St. Louis, Mo. Received September 13, 1916. Quoted notes by Mr. Kotchetkov.

43301. Amelanchier rotundifolia (Lam.) Dum.-Cours. Malaceæ.
(*Amelanchier vulgaris* Moench.) **Service berry.**

"From Tiflis Botanical Garden."

A low tree or shrub, 15 to 20 feet high, with roundish oval leaves which are very downy and pure white beneath when young, becoming nearly or quite smooth at maturity. The few large white flowers, often 1½ inches in diameter, are borne in erect racemes. The fruit is first red, then black, covered with a purplish bloom, and about the size of a black currant. It is edible, but not very palatable. This plant is native in the mountains of central and southern Europe and has been in cultivation for more than 200 years. It has the largest individual flowers of any

43301 to 43329—Continued.

of the cultivated amelanchiers and is very beautiful in late April or May. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 190.*)

43302 and 43303. AMYGDALUS FENZLIANA (Fritsch) Korsh. Amygdalaceæ. (*Prunus fenzliana* Fritsch.)

"From Tiflis Botanical Garden."

A shrublike tree, with long purplish branches and narrowly ovate leaves. The reddish flowers appear before the leaves in few-flowered clusters and are smaller than those of *Amygdalus communis.* The peachlike fruit appears on the usually leafless twigs of the previous season's growth, and the flesh is relatively dry. (Adapted from *Fritsch, Sitzungsberichte Akademie Wissenschaften Wien, vol. 101, pp. 632 to 636.*)

43302. The ordinary form.

43303. Selected form, with larger fruits.

43304. LAUROCERASUS OFFICINALIS Roemer. Amygdalaceæ. (*Prunus laurocerasus* L.) **Cherry laurel.**

"From Tiflis Botanical Garden."

An evergreen shrub of quick growth and wide-spreading habit, over 20 feet in height and twice as much in width, entirely devoid of hairs or down. The young shoots are pale green and the leaves are leathery, dark shining green, of various shapes and sizes up to 6 inches long; each bears two or more glands on its lower surface near the base. The dull white flowers are borne in terminal and axillary racemes and the conical fruits are purplish black, about half an inch long, with conical stones. This plant is a native of eastern Europe and Asia Minor and was introduced in 1629, according to Aiton. It flowers in April, but is not as hardy as the Portugal laurel and is not adapted for planting in ordinary shrubberies. It is admirable for planting as undergrowth in thin woodland. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 240.*)

43305. PRUNUS AVIUM L. Amygdalaceæ. **Mazzard cherry.**

"From Tiflis Botanical Garden."

A deciduous tree up to 60 feet or more in height, with a trunk sometimes 2 feet and more in thickness and shining bark, which peels horizontally. The young twigs are smooth and the oval leaves are 3 to 5 inches long. The pure white flowers, about 1 inch across, appear in stalkless clusters from the previous year's shoots and from spurlike branches of earlier date. The round, blackish red fruit is about three-fourths of an inch in diameter and is sweet or bitter, but not acid. This tree is a native of Europe, including England, and is one of the parents of the cultivated fruiting cherries, especially the black ones. It should not be confused with *Prunus cerasus* and *P. acida*, from which it differs in being larger, having more coarsely toothed leaves and a fruit which is not acid. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 229 and 230.*)

43306. PRUNUS CERASIFERA DIVARICATA (Ledeb.) C. Schneid. Amygdalaceæ. (*Prunus divaricata* Ledeb.) **Persian cherry-plum.**

"From Tiflis Botanical Garden."

A deciduous round-headed tree up to 30 feet in height, with serrate leaves 1½ to 2½ inches long and pure white flowers, often in dense clusters.

43301 to 43329—Continued.

This differs from the true species in having smaller and yellow fruit which is not indented at the stalk. It is said to be a native of the Caucasus, Persia, Macedonia, etc., and was introduced in 1822. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 235.*)

43307. PRUNUS MAHALEB L. Amygdalaceæ. **Mahaleb cherry.**

"From Tiflis Botanical Garden."

A free-growing, deciduous tree up to 30 or 40 feet in height, with a loose, spreading head of branches and the young twigs downy. The glossy green leaves are broadly ovate or roundish, more or less hairy on each side of the midribs, and are 1 to 2½ inches long. The pure white, very fragrant flowers occur to the number of 6 to 10 in racemes. The somewhat egg-shaped, black fruit is about one-fourth of an inch long. This plant, native of central and southern Europe, was introduced in 1714. It flowers in late April and early May, is fast growing, and thrives well in the sandy soil of Kew. It may be propagated by cuttings made of moderately firm young wood and placed in gentle bottom heat; also by layering. The type raised from seed is used as a stock for grafting cherries. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 242.*)

43308. PRUNUS MICROCARPA Meyer. Amygdalaceæ. **Syrian cherry.**

"From Tiflis Botanical Garden."

A deciduous bush, 3 or 4 feet high, with stiff short-jointed branches and downy branchlets. The coarsely serrate, broadly ovate pointed leaves are one-half to 1 inch long, and the rosy pink flowers are produced in clusters of two or three from buds and spurs of older branches. The red or yellow fruit is ovate and nearly half an inch in length. This bush is a native of Asia Minor and in 1890 was introduced into Kew, where it requires the sunniest position possible. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 243.*)

43309. PRUNUS PROSTRATA Labill. Amygdalaceæ. **Mountain cherry.**

"From Tiflis Botanical Garden."

A deciduous shrub, 2 to 3 feet high, with a low, spreading habit and much wider than high. The slender branches are arched, and the twigs are covered with a minute dark down. The pointed, ovate or obovate, sharply serrate leaves are from 1 to 1½ inches long and downy beneath. The bright rose-colored flowers appear singly or in pairs, and the almost stalkless fruit is red and about one-third of an inch long. This shrub is native in the mountains of the Levant and was introduced into Kew in 1802. It needs a sunny position. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 248 and 249.*)

43310. PRUNUS SPINOSA L. Amygdalaceæ. **Sloe.**

"From Tiflis Botanical Garden."

A deciduous, suckering shrub, 10 or 15 feet in height, or in gardens a small tree, with the bark of the young shoots downy and many of the short branches terminated by a spine. The ovate, serrate leaves are sometimes nearly 2 inches long, are downy beneath, sometimes becoming glabrous with age. The pure white flowers appear in March or April, usually singly on the naked wood, and the round fruit, which is half an inch in diameter, is at first blue, then black, and very harsh to the taste. The sloe is native in England and other parts of Europe, as well as in northern Asia. Its slow growth makes it suitable for small gardens.

43301 to 43329—Continued.

The wood is very hard and is prized in rural districts for making hay-rake teeth. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 253 and 254.*)

43311 and 43312. Avena sativa L. Poaceæ. **Oats.**

43311. "Local. From the Kazatchin Experiment Field of the Yenisei Government, Siberia."

43312. "No. 353. Local variety, supposed to be rustproof. From the Tulun Experiment Field, Government of Irkutsk, Siberia."

43313 and 43314. Hordeum spp. Poaceæ. **Barley.**

43313. Hordeum vulgare pallidum Seringe.

"*Petchora* barley. From the Petchora Experiment Station, Ust-Tsilma, Government of Archangelsk, Russia."

43314. Hordeum nodosum L.
(*Hordeum secalinum* Schreb.)

"In district of Novo-Uzensk on alkali soils. From the Krasnokut Experiment Station, Samara, Russia."

43315 to 43318. Secale cereale L. Poaceæ. **Rye.**

43315. "Local spring rye. From the Kazatchin Experiment Field of the Yenisei Government, Siberia."

43316. "Local winter rye. From the Kazatchin Experiment Field of the Yenisei Government, Siberia."

43317. "No. 63. Winter rye. Of local forms, well resisting frost and the excess of moisture in the spring. From the Tulun Experiment Field, Government of Irkutsk, Siberia."

43318. "No. 73. Winter rye. Of local forms, well resisting frost and the excess of moisture in the spring. From the Tulun Experiment Field, Government of Irkutsk, Siberia."

43319 to 43327. Triticum aestivum L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

43319 to 43321. "From the Kazatchin Experiment Field of the Yenisei Government, Siberia."

43319. "*Arnautka,* local spring wheat."

43320. "*Minusinka,* spring wheat."

43321. "*Sibirka,* spring wheat."

43322 to 43327. "From the Tulun Experiment Field, Government of Irkutsk, Siberia."

43322. "No. 22–A. Spring wheat. A representative of the mass selection of local, early, small-seed wheat, supposed to be interesting as material for hybridization for securing early forms."

43323. "No. 31–B. Spring wheat, of interest in hybridization work, the same as No. 22–A [S. P. I. No. 43322]."

43324. "No. 48. Spring wheat, of interest in hybridization work, the same as No. 22–A [S. P. I. No. 43322]."

43325. "No. 324. Spring wheat. A representative of local red ear with large seeds."

43326. "No. 804. Winter wheat. Secured from peasant immigrants."

43327. "No. 806. Winter wheat. Secured from peasant immigrants."

43301 to 43329—Continued.

43328 and 43329. Zea mays L. Poaceæ. **Corn.**

43328. "Local. From Tiflis Botanical Garden."

43329. "*Kutais.* From Tiflis Botanical Garden."

43330. Passiflora maliformis L. Passifloraceæ. **Granadilla.**

From Bogota, Colombia. Presented by Mr. Jorge Ancizar. Received September 16, 1916.

See S. P. I. No. 43298 for previous introduction and description.

43331. Canavali roseum (Swartz) DC. Fabaceæ.

From Kingston, Jamaica. Presented by Mr. W. Harris, Superintendent of Public Gardens. Received September 18, 1916.

"An undershrub with a creeping ascending stem and shining nearly round leaflets. The racemes are longer than the leaves, the flowers being reddish blue and subcoriaceous. The pods are oblong and shortly acuminate. The plant is found on the sandy shores of Jamaica, and was described by Swartz as *Dolichos roseus.*" (*DeCandolle, Prodromus Systematis Naturalis Regni Vegetabilis, vol. 2, p. 404.*)

43332. Schinopsis lorentzii (Griseb.) Engl. Anacardiaceæ.
(*Quebrachia lorentzii* Griseb.) **Quebracho.**

From Buenos Aires, Argentina. Presented by Sr. Benito Carrasco, director, Botanic Garden. Received September 18, 1916.

"Tree with very hard wood, unequally pinnate coriaceous compound leaves, flowers in branched panicles; fruit a samara. The products which are extracted from this tree constitute the principal resource of the inhabitants where the tree grows. It is one of the Argentine woods which if exposed to the air, buried in part or entirely, or submerged in water will keep 25 years in good condition, as is attested by experiments made by the Argentine railway with posts, beams, ties, etc. When full grown the logs are made into beams, ties, telegraph poles, etc., and exported in large quantities. The charcoal is very compact and the extract (tannin) is an important product. The sawdust is much used as an astringent." (*Carrasco.*)

43333. Annona cherimola × squamosa. Annonaceæ. **Atemoya.**

From Manila, Philippine Islands. Seeds presented by Mr. Adn. Hernandez, Director of Agriculture. Received September 20, 1916.

See S. P. I. No. 43263 for previous introduction and description.

43334 to 43336. Vicia faba L. Fabaceæ. **Broad bean.**

From Barcelona, Spain. Procured through Mr. Harris N. Cookingham, American vice consul in charge. Received September 22, 1916.

"Upon the gathering of the new harvest, I have obtained through a local firm seeds of the horse bean most widely cultivated in Spain. These varieties are commonly produced here for forage and human consumption."

43334. "No. 1. *Mahon* horse or broad bean."

43335. "No. 2. Small *Jerez* horse or broad bean."

43336. "No. 3. *Seville* horse or broad bean."

43337. Belou marmelos (L.) Lyons. Rutaceæ. **Bel.**
(*Aegle marmelos* Correa.)

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Hawaii Agricultural Experiment Station. Received September 25, 1916.

See S. P. I. Nos. 43027 and 43028 for previous introductions and description.

43338. Dimocarpus longan Lour. Sapindaceæ. **Longan.**
(*Nephelium longana* Cambess.)

From Paget East, Bermuda. Presented by Mr. E. J. Wortley, director, Bermuda Agricultural Station. Received September 27 and 29, 1916.

"The tree from which these seeds were obtained has borne very sparingly." (*Wortley.*)

43339. Hovenia dulcis Thunb. Rhamnaceæ. **Raisin tree.**

From Chungking, China. Plants presented by Mr. E. Widler. Numbered December 6, 1916.

A tree growing to a height of 40 to 60 feet, native of China, where it is cultivated for the peculiar swollen fruit peduncles, which are much esteemed by the Chinese as a delicacy. (Adapted from a note from *Frank N. Meyer, May 11, 1915.*)

See also S. P. I. No. 40718 for further description.

43340 to 43373. Triticum spp. Poaceæ. **Wheat.**

From Montevideo, Uruguay. Presented by Mr. L. Moreira Acosta, Laboratorio Agronomico. Received September 14, 1916.

"A collection of prize wheats of the First National Exhibit of wheats. These wheats are degenerates, but are adaptable to our climate, which has several drawbacks to the cultivation of cereals, due to their resistance and robustness. You will be able to judge our progress in the cultivation of this cereal, which has only in late years had scientific attention devoted to it by our agricultural experts who have studied in our institutes." (*Acosta.*)

43340 to 43342. Triticum durum Desf. Poaceæ. Wheat.

43340. No. 1549. Trigo de fideo.

43341. No. 411. Trigo de fideo.

43342. No. 805. Trigo de fideo.

43343 to 43373. Triticum aestivum L. Poaceæ. Wheat.
(*Triticum vulgare* Vill.)

43343. No. 1955. Trigo Americano.
43344. No. 1021. Trigo.
43345. No. 1266. Trigo.
43346. No. 1070 or 1570. Trigo.
43347. No. 1095. Trigo.
43348. No. 1381. Trigo.
43349. No. 211. Trigo.
43350. No. 2007. Trigo.
43351. No. 551. Trigo.
43352. No. 367. Trigo.
43353. No. 43. Trigo Pelon.
43354. No. 851. Trigo Pelon.
43355. No. 602. Trigo Pelon.
43356. No. 535. Trigo Pelon.
43357. No. 879. Trigo Pelon.
43358. No. 1218. Trigo Pelon.
43359. No. 1991. Trigo Pelon.

43360. "No. 1283. Trigo Pelon and Trigo Rietti." These two varieties were received under No. 1283 and the packages did not contain the varietal names mentioned in the letter.

43340 and 43373—Continued.

43361. No. 1487. Trigo Pelon.
43362. No. 1518. Trigo Pelon.
43363. No. 1093. Trigo Pelon.
43364. No. 545. Trigo Pelon.
43365. No. 642. Trigo Pelon.
43366. No. 1525. Trigo Pelon.
43367. No. 1410. Trigo Barletta.
43368. No. 517. Trigo Barletta.
43369. No. 1036. Trigo Barletta.
43370. No. 1555. Trigo Italiano.
43371. No. 1408. Trigo Italiano.
43372. No. 546. Trigo Fucense.
43373. No. 1331. Trigo Gironde.

43374. PHYTELEPHAS MICROCARPA Ruiz and Pav. Phœnicaceæ.

Corozo nut.

From Pernambuco, Brazil. Presented by Mr. A. T. Haeberle, American consul general, Rio de Janeiro. Received September 5 and 7, 1916.

This small palm is found native along the banks of streams and on springy hillsides in the Peruvian Andes at an altitude of about 3,000 feet and is closely allied to the one which furnishes the vegetable ivory or *tagua* nut of commerce (*Phytelephas macrocarpa*), although it has smaller fruits. The slender inclined stem, sometimes absent entirely, grows up to 10 feet in length, and the fruits are about the size of a child's head, resembling externally some anonas to such an extent that the Peruvians call them *anon de palma*, but the palm itself is called *yarina*. The thick furrowed rind is tough and is reddish within and may be eaten, having a flavor of melon or moldy cheese. The albumen of the unripe seeds is drunk while still watery or eaten when it becomes fleshy, resembling in taste a coconut in like state, but when quite ripe it is too hard for eating. (Adapted from *description by Richard Spruce, furnished by C. B. Doyle.*)

43375 to 43377. CANARIUM INDICUM Stickm. Balsameaceæ.

(*Canarium commune* L.) **Java almond.**

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received September 26, 1916.

See S. P. I. No. 43024 for previous introduction and description.

43378 and 43379.

From Tahiti, Society Islands. Presented by Mr. Edouard Ahnne, president, Chamber of Agriculture, through Mr. Thomas B. L. Layton, American consul. Received September 25, 1916. Quoted notes by Mr. Layton.

43378. COIX LACRYMA-JOBI L. Poaceæ. **Job's-tears.**

"Called locally *Poepoe*, but known elsewhere as *Job's-tears*. It was introduced into Tahiti some 30 or 40 years ago, it is said, from the West Indies. The young plants are an excellent forage for both cattle and horses, which seem to eat eagerly of the seeds while they are green and tender. It occurs in abundance in the island of Tahiti, though it is also found in much smaller quantities in nearly every part of the colony. The plant prefers and thrives best in damp soil and in localities where the humidity is great."

43379. INDIGOFERA SUFFRUTICOSA Mill. Fabaceæ. **Indigo.**
(*Indigofera anil* L.)

"A leguminous plant found in the colony. Its distribution is extensive throughout the colony, but it occurs in greatest abundance in the Mar-

43378 and 43379—Continued.

quesas Islands, where it grows wild in the low-lying valleys and along the seashore. Mr. Ahnne has supplied specimens of this plant, not because of its qualities as a forage (since it has no value as an animal food), but because he believed it might be of interest to the Department of Agriculture to learn of its presence here. There are very few forage grasses in the colony, and the land available for pastures is of limited area."

43380 and 43381.

From Dindigul, southern India. Presented by Rev. Willis P. Elwood, American Madura Mission. Received September 27, 1916. Quoted notes by Rev. Mr. Elwood.

43380. CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ. **Sword bean.**

"The beans are a very good variety and are perennial. A kind of trellis or arbor should be provided for the beans to run on, as they are rampant growers. The pods when young and tender are cooked, and no Golden Wax bean can surpass them in quality. Of course, they are a purely tropical plant, but they would probably grow in the most southern parts of the country."

43381. MAXIMILIANEA GOSSYPIUM (L.) Kuntze. Cochlospermaceæ.
(*Cochlospermum gossypium* DC.)

"The seeds are of a variety of silk cotton. The trees grow in shallow soil on the top of sloping rocks. The flowers are lemon colored, up to 6 inches in diameter, and are very fragrant. The trees grow at altitudes of 2,000 to 2,500 feet in latitude 10° N. They are never seen anywhere except above rocks."

43382. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Swatow, China. Presented by Mr. G. Hanson, American consul. Received September 28, 1916.

"Cling variety."

43383 to 43385.

From Brazil. Collected by Dr. J. N. Rose, United States National Museum. Received September 25, 1916.

43383. ARAUCARIA BRASILIANA A. Rich. Pinaceæ.

"Rose No. 20427. From Monte Serrat, vicinity of Itatiaya, Brazil; collected July 26, 1915."

A tall evergreen tree, native in southern Brazil, sometimes 100 feet high, with large and nearly globular cones. The wood is used in construction work for turning, ship's masts, cabinetwork, and for matches. The thick, resinous bark yields, by a fermentation process, an agreeable medicinal drink, and the ashes contain much potash; the resin exuded by the bark furnishes by-products useful in the industries and in medicine. The edible seeds produce white and delicate starch. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, p. 346,* and from *Correa, Flora do Brazil, p. 61.*)

43384. IPOMOEA sp. Convolvulaceæ.

"Rose No. 19969. From the vicinity of Machado Portella, Bahia, Brazil; collected June 19 to 23, 1915."

43383 to 43385—Continued.

43385. Operculina tuberosa (L.) Meisn. Convolvulaceæ.
(*Ipomoea tuberosa* L.)

A perennial, stout-stemmed herbaceous vine, climbing to the tops of the tallest trees. The leaves are large and compound, with seven oblong sharp-pointed leaflets, and the three to six yellow flowers are on a long peduncle. The fruit is a membranous round capsule, about an inch long, containing two or four seeds which are covered with a black tomentum. The tuber is enormous, but not edible, the entire plant being used as a purgative. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises, pp. 398 and 567.*)

43386 and 43387.

Collected by Dr. J. N. Rose, United States National Museum. Received September 25, 1916.

43386. Prosopis strombulifera (Lam.) Benth. Mimosaceæ.

"Rose No. 20974. From the vicinity of Mendoza, Argentina, September 1, 1915. This grows commonly in the Mendoza Desert and is a low shrub not over 12 inches high. Its peculiar screw-shaped pods look like bright-yellow spikes of flowers a short distance away. The plant might prove to be a very good hedge or border plant in western Texas and Arizona. The pods hang on long after the leaves have fallen." (*Rose.*)

43387. Tounatea crocea (Benth.) Kuntze. Cæsalpiniaceæ.
(*Swartzia crocea* Benth.)

"*Mocutaiba.* From the Jardim Botanico, Rio de Janeiro, Brazil."

A bushy tree, with leaves having three elliptical leaflets and winged petioles. In October the tree is covered with racemes, each consisting of three or four very aromatic yellow flowers. The Brazilian tree is planted in avenues, and the wood is used for interiors and cabinetwork. According to Rodrigues, its native name is *Mocutaiba*, while Correa gives *Mocitahyba*. (Adapted from *Rodrigues, Hortus Fluminensis, p. 138*, and from *Correa, Flora do Brazil, p. 51.*)

43388. Phaseolus coccineus L. Fabaceæ. Scarlet Runner bean.

From Boscotrecase, Naples, Italy. Presented by Dr. Gustav A. Eisen. Received September 28, 1916.

"*Fagiuoli di Cera.* Named on account of their waxy color, and were the best I tasted in Italy." (*Eisen.*)

A bean with a twining stem, which, if supported, will rise to a height of 14 feet. The leaves are smaller than those of the common kidney bean, and the flowers, which are in long spikes and of a deep scarlet color, are larger. The pods are large and rough, and the seeds are purple marked with black, although sometimes pure white. This bean was formerly cultivated for its flowers only and was first mentioned as being edible by the gardener, Philip Miller. (Adapted from *Miller, Gardener's and Botanist's Dictionary, ed. 9.*)

43389. Aleurites trisperma Blanco. Euphorbiaceæ.
Soft lumbang.

From Los Banos, Philippine Islands. Presented by Mr. F. W. Foxworthy, Manila Bureau of Forestry, at the request of Mr. A. W. Prautch, Muntinlupa. Received September 28, 1916.

"The advantages of *Aleurites trisperma* are that the seeds are easier to crack and that the oil dries quicker than that of *A. moluccana*, according to our Bureau of Science. I have for years written and advocated that our *lumbangs* (Aleurites) be utilized instead of allowing unknown tons of seed (especially of *A. moluccana*) to lie and rot; that the world's supply of vegetable oils is growing in importance, as coconut oil is being more and more withdrawn for food." (*Prautch.*)

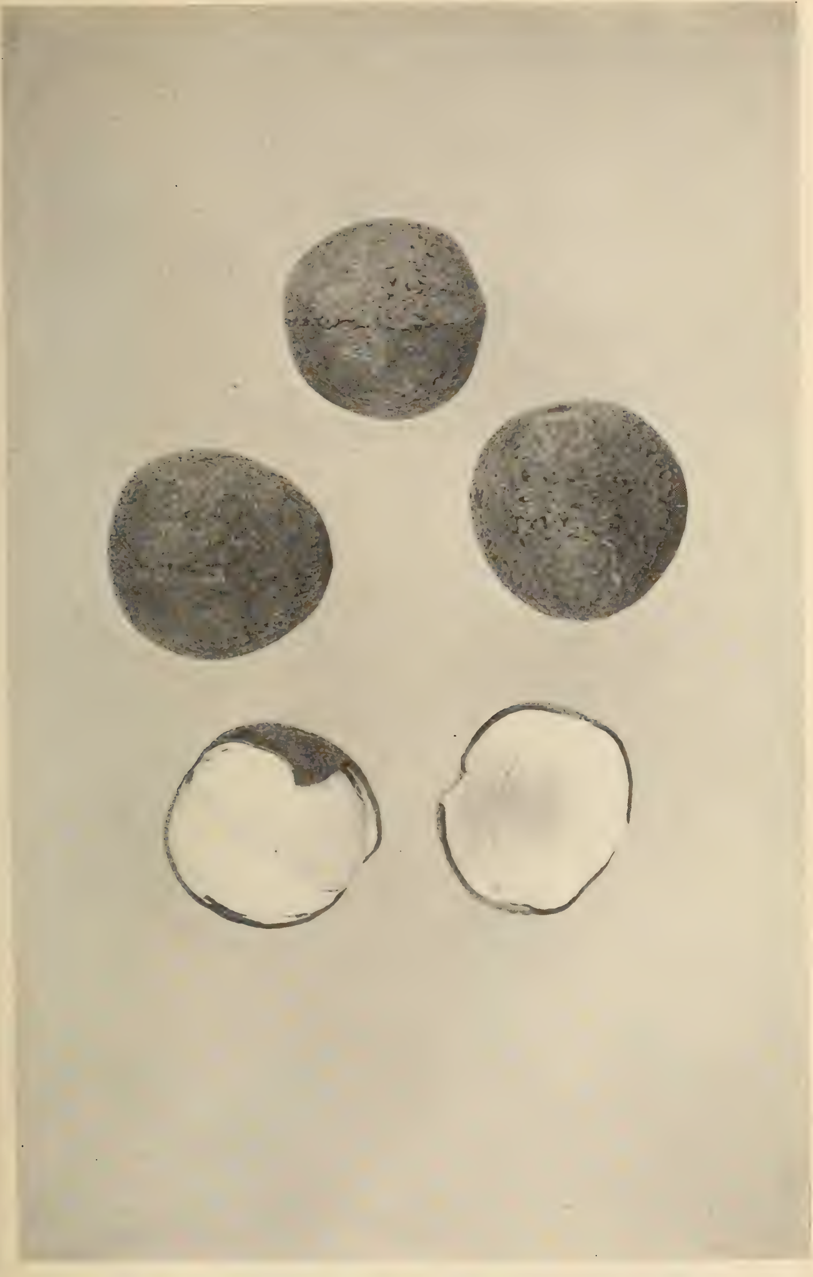
"From data given by the late William S. Lyon, of Manila, and more recently by the Philippine Bureau of Forestry, it appears that *Aleurites trisperma*, the soft-shelled lumbang, is much less regular and prolific in bearing than *A. moluccana*, the more common, hard-shelled species." (*R. A. Young.*)

For an illustration showing the seeds of the soft lumbang, see Plate V.

43390. RATIBIDA COLUMNIFERA APPENDICULATA Cockerell. Asteraceæ.
(*Rudbeckia columnaris* Sims.)

From Boulder, Colo. Presented by Mr. T. D. A. Cockerell. Received September 14, 1916.

A low, sweet-scented perennial herb, little branched, with pinnatifid leaves and lanceolate leaflets. The cylindrical receptacle is elongated, and in this variety the yellow ray flowers possess long appendages, usually a pair, arising from the throat. The plant is quite hardy, although it is best to put it in a coldframe during the winter. This plant was discovered in Boulder, Colo., July 8, 1916, by Mr. T. D. A. Cockerell and was introduced for the remarkable collarette which it possesses. (Adapted from *Curtis's Botanical Magazine, vol. 39, pl. 1601*, and *Cockerell*, in *Journal of Heredity, September, 1916, pp. 428, 431.*)



SEEDS WHICH ARE THE SOURCE OF A QUICK-DRYING OIL, THE SOFT LUMBANG (ALEURITES TRISPERMA BLANCO., S. P. I. No. 43389).

The valuable oil expressed from the seeds of the lumbangs (*Aleurites moluccana* and *A. trisperma*) merits more attention than has hitherto been accorded it. The seeds of the soft lumbang are easier to crack and the oil dries quicker than that of the hard lumbang (*A. moluccana*), which is better known. With the amazing rise in importance of vegetable oils, these trees are bound to prove of increasing value. (Photographed, natural size, by E. C. Crandall, Oct. 15, 1909; P4868FS.)

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Issued September 14, 1921.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED
BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1916.

(No. 49; Nos. 43391 to 43979.)

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GOVERNMENT PRINTING OFFICE.
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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1916 (NO. 49; NOS. 43391 TO 43979).

INTRODUCTORY STATEMENT.

This inventory is the third to be issued since the declaration of war in April, 1917, and although it covers only 588 numbers it includes a very considerable range of new plants, some of which are not only new to this country as crop plants, but appear to be new to science.

It is my sad task to record in this inventory the death of our agricultural explorer, Frank N. Meyer, whose unique and interesting descriptions of plants, particularly from China, Siberia, and Turkestan, have formed for the past 10 years so important a part of the reading matter of these inventories.

The particulars regarding Mr. Meyer's death will probably never be known. The cabled advices show that he fell overboard into the Yangtze River on the evening of June 1, 1919, from the steamer *Feng Yang Maru* while en route from Hankow to Shanghai and that his body was discovered 30 miles above the town of Wuhu, near Nanking. The facts that his wanderings in search of plants are over and his contributions to these inventories at an end are chronicled with great regret. It is perhaps a significant coincidence that his only contribution to this number is a weeping variety (No. 43791) of the dry-land elm, which was one of his substantial additions to our list of useful trees.

In this inventory are included accounts of some of Wilson Popenoe's interesting discoveries in Guatemala, where, as an agricultural explorer for the Office of Foreign Seed and Plant Introduction of the Bureau of Plant Industry, he spent over 16 months, traveling more than 2,000 miles on horseback over the Guatemalan highlands, in search, primarily, of promising seedlings of the thick-skinned Guatemalan race of avocado.

Perhaps nothing that has occurred in recent years could more strongly emphasize the fact that the horticulturists of southern California and southern Florida are pioneering in the field of tropical horticulture than this search for seedling avocados in Guatemala; and it is a striking spectacle that one country in the very beginning of a plant industry is hunting for promising seedlings in another where that industry, still on a seedling basis, is one of the main sources of food. In Guatemala there does not appear to be a single orchard of grafted or budded trees, whereas in the United States there is scarcely a seedling orchard to be found.

Mr. Popenoe, whose familiarity with American grafted varieties of avocados enabled him to select commercially promising sorts, inspected thousands of avocado trees growing in dooryards and coffee plantations. After judging the productivity and vigor of the trees, sampling the fruits, and noting the time of their ripening, he photographed both trees and fruits and sent in bud wood for propagating purposes, with a careful pomological description of each variety. In this number he describes the following avocado introductions: Nos. 43476, 43486, 43487, 43560, 43602, and 43932 to 43935. Descriptions of other varieties will be found in other inventories.

To the best varieties established as budded trees in our greenhouses and field stations, special names have been given. These names are all taken from the Maya language, the native language of the aborigines of Guatemala, and, as they are not difficult to pronounce, it is believed that they should be retained by American horticulturists. They will serve to identify the varieties as of Guatemalan origin, obviate the difficulty which always arises from an indiscriminate naming by growers, and stand as an acknowledgment on our part of the right of one country to have its gifts to another bear the characteristic names of the country of their origin. The time has gone by when international courtesy should permit us to bring in from a foreign country a new plant variety, strip it of the name it bears in its native home, and give it either the name of its introducer or some commonplace English name.

It is particularly desired to record here our Government's appreciation of the courtesies extended to Mr. Popenoe by the officials and the people of Guatemala. The plants which his expedition brought in can not fail to become more important as the years pass, and the Guatemalan avocado will constitute a most valuable gift from our sister Republic, rivaling perhaps even the gift of the orange from China to Italy or the potato from Peru to Ireland.

With the rapid advance being made in avocado culture in America, Mr. Popenoe's discovery in Guatemala of a new and remarkable and hitherto undescribed relative of the avocado becomes a historical fact of more than usual importance. The anay (*Hufelandia anay*, No. 43432), as it is called, is a tall forest tree of low altitudes and therefore tender. Its fruits are edible, but not comparable to avocados.

The Guatemalan coyó (*Persea schiedeana*, No. 43931), produces fruit that rivals even the avocado in quality, though it is apparently strictly tropical in character.

The chayote, or "mirliton" as it has been called for years by the Creoles of New Orleans, was represented in this country until recently by two, or at most three, rather distinct varieties. Messrs. Cook and

Collins called attention to the existence of several varieties in Guatemala as early as 1901; and it appears from Mr. Popenoe's investigations that this vegetable is not only a most important one to the Guatemalans, but that it is represented by a large number of very distinct sorts. The success of our large plantings in Florida is demonstrating the economic advantages of this remarkable vegetable, which is capable of being kept perfectly in cold storage from November to July. In Guatemala it is called "güisquil," and two main classes are distinguished—the peruleros or small, smooth sorts and the ordinary, large, sutured varieties. Some of these varieties (No. 43398, for example) are free from sutures and consequently easier to pare than the varieties with which we have so far experimented; others have a distinctive flavor (Nos. 43393 to 43401 and 43422).

The cherry has been looked upon by the Europeans living in the Tropics as a fruit limited to the Temperate Zone. It is especially interesting, therefore, to call attention to the cereza of Guatemala (No. 43425), which in its wild state is almost as large as an English Morello, with a meaty texture and the flavor of an oxheart mixed with a trace of bitterness. It is esteemed by the Guatemalans as a fresh fruit and for preserving purposes and deserves to be known throughout the Tropics.

The success of anona culture in Florida through the production of hybrids by Simmonds, Wester, and others, the quickness with which the trees recover when injured by frost, and the delicious character of the fruits make the introduction of the soncoya (*Annona purpurea*, No. 43426) from Guatemala of peculiar interest. This tree, already in cultivation in Guatemala, produces fruit the size of a pummelo, with orange-colored flesh and an aroma resembling that of our native papaw (*Asimina triloba*). It can hardly fail to contribute valuable characters to the hybrid fruits which are evidently coming when the plant breeders really get to work in a comprehensive way on the genus Annona.

Sicana odorifera (No. 43427) is a tropical cucurbit which deserves the consideration of our plant breeders because of its remarkable aroma and its striking color. Mr. Popenoe's introductions from Guatemala include a black-fruited one and also a carmine one which is as strikingly beautiful a fruit as the writer has ever seen.

The tropical papaya has come to stay in Florida, and every year more northern visitors learn to like it. The introduction of a very beautiful variety (No. 43428), with a deep reddish salmon-colored flesh of excellent texture, can not fail to interest Florida growers.

A fruit tree such as the nance (*Byrsonima crassifolia*, No. 43429), which is deemed worthy of a place in the dooryards of Guatemala, certainly deserves distribution to other tropical mountain regions.

The manzanilla, or tropical hawthorn (No. 43430) of Guatemala, discovered at Mazatenango, like the Chinese haw brought to our attention by the late Frank N. Meyer, appears to be a fruit highly prized by the people who grow it. In size and flavor it rivals the Chinese species, *Crataegus pinnatifida*, and the conserve made from it is quite as delicious.

With such materials as these Guatemalan and Chinese introductions to work with, it would seem possible to produce hybrids with our hardy species of Crataegus that would prove valuable in our Southern States.

The injerto, or green sapote (*Achradelpha viridis*, Nos. 43439 and 43788), unlike its relative, the sapote, is an inhabitant of high altitudes and therefore may be expected to thrive in Florida and California, although in both places the true sapote has failed. It is reported by Mr. Popenoe as having a better flavor than the sapote.

Three selected hybrids between the Chinese and European pears, produced by Dr. Van Fleet and because of their attractive shape, color, texture, and flavor now considered by him worthy of a wide trial throughout the country to determine their productiveness and their resistance to pear blight, are here described (Nos. 43442 to 43444).

Enterolobium timbouva (No. 43455), a characteristic tree of northern Argentina, sent in by Mr. H. M. Curran, is reported as being of such beauty that it is used as an ornamental in Buenos Aires. It is of very rapid growth and is an important timber tree. It is probably hardy enough to grow in California and Florida.

The introduction of seeds of the Paraguayan tea, or maté (Nos. 43456 and 43598), and their easy germination bring up again the whole question of this important crop from which millions of South Americans obtain a beverage corresponding to our tea and coffee, since it contains the same alkaloid. As pointed out by Mr. George F. Mitchell, maté differs from tea and coffee in that the theine which it contains is more easily extracted by hot water, and in the preparation of the drink much less tannin becomes dissolved in the brew than is the case with either tea or coffee. Just why the British Army and the Japanese Army should be tea-drinking armies, whereas the American is essentially a coffee-consuming one, is a question probably traceable to the vagaries of taste.

Pinus merkusii (No. 43462), from Java, has the distinction of being the only true pine known to be a native of the Southern Hemisphere, the so-called Kauri pine of New Zealand being a species of Dammara. It may thrive in California and Florida.

Mangifera verticillata (No. 43479), from the Philippines, introduced as of possible value as a stock for the mango, turns out to be a violently poisonous species, producing water blisters like those caused by the poison ivy or the tropical poison wood, *Hippomane mancinella*.

Whether *Persea azorica* (No. 43480), from St. Michaels, will be as refractory as our *Persea pubescens* as a stock or whether crosses can be produced between it and the avocado are questions for the breeders to decide. It is certain that breeders ought to have a chance to cross these various species under all sorts of conditions.

A remarkable collection of field and garden beans (Nos. 43492 to 43543), particularly from the Northern Circle, Burma, is presented by the Deputy Director of Agriculture at Mandalay.

The pickled mume of Japan (No. 43558), although forming part of the army ration of the Japanese, is as little known in America as though it were produced by a tree growing on some other planet. Interest in it is being aroused mainly because of the remarkable picturesqueness of the tree when in flower, but the value of its pickled fruits deserves our consideration.

Plants of the tussock grass (No. 43564), of the Falkland Islands, are presented by Mr. W. A. Harding, manager of the Falkland Islands Company. It is there considered not only an excellent forage grass, but is used like asparagus for human food, the young shoots having a nutty flavor.

The chufa industry of southeastern Spain is an important one, and the use of the small tubers for the production of the favorite beverage called horchata de chufa has already attracted the attention of American travelers. Consul Sprague gives a description of the culture under irrigation of this peculiar tuber (No. 43578), which contains a very appreciable amount of vegetable fat and a form of mannite. Apparently the main obstacle to growing this tuberous-rooted sedge in this country has been the difficulty of harvesting the tubers. Grown as they are in Spain, this difficulty seems largely to be reduced.

The so-called bonavist bean (*Dolichos lablab*) has begun to attract some attention in Florida as a cover crop for avocado and citrus orchards, making a dense growth and covering the ground well without climbing into the trees. It produces quantities of excellent beans, which when properly cooked are extremely palatable. The variety "Nankinicus" from Georgetown, British Guiana (No. 43594) and the large collection from Burma (Nos. 43505 to 43517) introduced at Mr. Piper's solicitation may bring forward varieties of better quality than the common one now grown in Florida, which came from the Bahamas. The bonavist bean appears to be peculiarly adapted to culture in Florida and deserves the serious consideration of horticulturists there.

A collection of rare and promising shrubs and ornamental trees presented by Prof. C. S. Sargent, of the Arnold Arboretum, includes many hardy and beautiful species from China and Japan collected by Mr. E. H. Wilson and other explorers (Nos. 43675 to 43701, 43703 to 43736, and 43810 to 43925). Sixty-one species of the genus Rosa form a part of this collection, and these are at the disposal of the rose breeders of the country both for trial as stocks and for purposes of hybridization. The six species of jasmine (Nos. 43802 to 43807) should stimulate among plant breeders the production of new forms of these sweet-scented plants. This collection also includes such valuable new plants as *Castanea henryi* (No. 43832), a tree closely related to the chinquapin but larger in dimensions, which is already being used by Dr. Van Fleet in his work on the hybridization of the occidental and oriental chestnuts; *Larix potanini* (No. 43851), the most valuable timber tree in China; a low-growing, profuse-fruiting mulberry with delightfully acid fruits, *Morus acidosa* (No. 43859); *Prinsepia uniflora* (No. 43863), a new hardy fruiting shrub from Shensi; and eight rare species of Prunus (Nos. 43864 to 43871) for the plant breeders of this genus.

Through the kindness of Dr. D. Duncan Main we have secured a quantity of the new species of Chinese hickory, *Carya cathayensis* (No. 43952), which Mr. Meyer discovered near Hangchow several years ago.

Two cultivated species of the genus Canarium (Nos. 43959 and 43960) furnish the U-lam or "black olives" and the Pak-lam or "white olives" of Kwangtung Province, China. These two fruits are so much prized that a man who attempted to steal them was tied to the tree he had climbed and periodically beaten by the owner of the tree. The fruits somewhat resemble dried olives when preserved, but have a distinct flavor of turpentine. They are used, however, in immense quantities in the Province of Kwangtung and deserve to be investigated.

The Australian quandong (No. 43423), bearing edible fruits and oily seeds, is likely to thrive in California and Florida and to add another oil-yielding tree to our flora.

The introduction of the ucuúba tree (No. 43424) of the Amazon Valley, which is considered by Huber one of the most useful trees of the region because of its easily worked timber, emphasizes a fact well recognized by foresters that sooner or later systematic culture of tropical timber trees on a vast scale will prove to be a profitable business, just as plantation rubber has become a great plant industry.

The botanical determinations of seeds introduced have been made and the botanical nomenclature revised by Mr. H. C. Skeels, and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Mrs. Ethel H. Kelley.

David Fairchild,
Agricultural Explorer in Charge.

Office of Foreign Seed and Plant Introduction,
Washington, D. C., September 30, 1919.

INVENTORY.[1]

43391. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

From Maryland. Presented by Mr. H. A. Ernst, Youngstown, Ohio. Received October 2, 1916.

"Colored Lima beans, which I secured in Maryland several weeks ago. I was informed there that this bean has been grown by three or four generations of the Ernst family in Frederick and Carroll Counties, and they refer to it as the *Ernst* bean. There can be no doubt but that it will produce true to type. The sample is somewhat undersized, owing to the unfavorable season." (*Ernst.*)

43392. ALBIZZIA JULIBRISSIN Durazz. Mimosaceæ.

From Fruitland Park, Fla. Presented by Mr. Louis P. Bosanquet. Received October 2, 1916.

"Seeds of what seems to be a red-flowered form. I have been growing this tree here for a long time. The flowers are much handsomer than the usual form of *Albizzia julibrissin*, and the new growth is a bluer green." (*Bosanquet.*)

See S. P. I. No. 36810 for a description of this species.

43393 to 43401. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received October 6, 1916. Quoted notes by Mr. Popenoe.

"(No. 25a. September 16, 1916.) The chayote, here called *güisquil*, is one of the commonest vegetables in this part of Guatemala and exists in a number of varieties. The following set includes those which have been seen commonly in the market during the past two weeks.

"Two classes of chayotes are distinguished in the markets as *güisquiles* proper and *güisquiles peruleros* or Peruvian *güisquiles*. The former includes practically all of the larger fruits; they vary from green to white in color, some are prickly and some smooth, and the surface is usually roughened, sometimes with deep sutures from base to apex. The second class, *güisquiles peruleros*, includes small fruits, white to green in color, with the surface smooth and free from prickles or soft spines. Both classes are exceedingly abundant in the market."

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[1] Each introduction consists of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received by the Office of Foreign Seed and Plant Introduction; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names in American literature becomes necessary, the designations appearing in this inventory will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

43393 to 43401—Continued.

43393. "*Güisquiles* proper. Pyriform, light green. This seems to be a very good variety, both because of its large size and its flavor, which is said to be good. It is pear shaped, flattened on both sides, the surface slightly rough and marked by several deep sutures. It is about 6 inches in length and weighs a pound and a quarter. In color it is a pale waxy green, and there are a few spines toward the apex of the fruit. It is the largest variety which I have seen here."

43394. "*Güisquiles* proper. Pyriform, deep green. This variety is slightly smaller than the last [S. P. I. No. 43393], but of the same form. It is 5½ inches long and weighs a pound. The surface is rich green, practically smooth, and without spines."

43395. "*Güisquiles* proper. Small, prickly, white. This is a smaller fruit than the last two [S. P. I. Nos. 43393 and 43394], measuring about 4 inches in length and weighing about 7 ounces. It is obovate to pyriform, flattened on the sides, white, the surface marked with shallow sutures and thickly covered with short, soft spines. While the quality is said to be good, the small size and spiny surface of this variety probably prevent its being considered among the best."

43396. "*Güisquiles* proper. Smooth, round, green. This variety is nearly spherical in outline, flattened on both sides, rich green in color, the surface slightly furrowed and nearly free from spines, having only a few toward the apex. It measures 4 inches in length and weighs about 10 ounces. It is one of the commonest varieties in the market, but is said not to be of the best quality."

43397. "*Güisquiles* proper. Prickly, round, green. Slightly smaller than the last [S. P. I. No. 43396], but of the same form. It measures 3 inches in length and weighs about 7 ounces. The surface is bright green, slightly furrowed, and covered thickly with spines. This seems to be rather inferior."

43398. "*Güisquiles peruleros.* Large white *perulero.* This is the best which I have seen and seems worthy of attention in the United States. Its attractive appearance, the absence of deep sutures (which render its preparation for the table easier, since the sutures make it difficult to pare some of the varieties), and its good quality combine to make this sort worthy of special notice. The variety is large for its class, measuring 3½ inches in length and weighing 9 ounces. It is broadly ovate in outline, very plump, the surface nearly smooth, waxy white in color, and entirely free from spines, as are all the *peruleros.*"

43399. "*Güisquiles peruleros.* Small white *perulero.* Much the same shape as the last [S. P. I. No. 43398], but slightly more tapering at the base. It is 2¾ inches in length and weighs about 3 ounces. The surface is similar to that of the large white *perulero.* This and the following two varieties are probably too small to be worthy of much attention in the United States."

43400. "*Güisquiles peruleros.* Light-green *perulero.* Similar in size and shape to the last variety [S. P. I. No. 43399], but differing in color. This one is whitish green and has rudimentary spines, almost too small to be noticed at first glance."

43401. "*Güisquiles peruleros.* Dark-green *perulero.* Slightly smaller than the last two [S. P. I. Nos. 43399 and 43400], but of the same form. The surface is quite smooth and of deep-green color. This is a very common variety in the markets and sells at a very low price."

43402 to 43409.

From Constantinople, Turkey. Received through Mr. Hoffman Philip, secretary of the American Embassy, at the request of Mr. W. Stanley Hollis, consul general, Beirut, Syria, October 3, 1916. Quoted notes by Mr. George M. Young, consular agent, Beirut.

43402 to 43404.[2] AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

"Peach seeds from Damascus. It is said that the peaches here are usually very good. The seeds are planted about 10 inches deep in the soft rich soil in the month of December and watered every two weeks from February on. Grafts are usually made in the springtime and from other and better varieties on the worst variety, *Kelabi.*"

43402. "*Zihri*, summer; thus named from the approximate time of ripening."

43403. "*Shetawi*, winter; thus named from the approximate time of ripening."

43404. "*Kelabi*, large seed."

43405 to 43408.[2] PRUNUS ARMENIACA L. Amygdalaceæ. Apricot.

"Apricot seeds from Damascus. Nothing could be more beautiful than the Damascus gardens of apricot trees in blossom time. Apricots thrive here and attain great perfection. Their taste is excellent. The seeds are planted about 10 inches deep in the soft rich soil in the month of December and watered every two weeks from February on. Grafts are usually made in the springtime and from the other and better varieties on the worst variety, *Kelabi.* The crop of apricots is so abundant and of such excellent quality that its exportation in the form of apricot paste enriches the locality."

43405. "*Beledi.*"

43406. "*Lozi.*"

43407. "*Kelabi.*"

43408. "*Ajami*, meaning Persian."

43409. AMYGDALUS COMMUNIS L. Amygdalaceæ. Almond.
(*Prunus amygdalus* Stokes.)

"Almond seeds from Damascus. It might be possible to successfully cultivate these nuts in America. Here they grow well and are eaten everywhere. A little donkey loaded with them may be seen in the streets almost any time during the season. They seem to thrive best on the higher ground. The seed is planted about 10 inches deep in the soft rich soil in the month of December and watered every two weeks from February on."

43410. ROSA RUBIGINOSA L. Rosaceæ. **Sweetbrier.**

From Medford, Oreg. Seeds collected by Dr. B. T. Galloway, of the Bureau of Plant Industry. Received October 9, 1916.

"A wild rose growing on the hillside. A fine plant in Mr. F. C. Reimer's yard at Talent, Oreg. Plant 5 to 6 feet high, forming a dense globose bush, covered with brilliant red fruit, very striking; stems one-half to 1 inch in diameter; leaves slightly scarlet. Mr. Reimer says the fruit hangs on all winter." (*Galloway.*)

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[2] See footnote, p. 11.

43411. Amaranthus paniculatus L. Amaranthaceæ. Amaranth.

From Cuzco, Peru. Presented by Mr. Albert A. Giesecke. Received October 9, 1916.

"A very special type of the popping variety, which is eaten as a confection or pop corn. It is rare even in Peru." (*Giesecke.*)

43412. Aleurites fordii Hemsl. Euphorbiaceæ. Tung-oil tree.

Plants grown at the plant introduction field stations from seed received from various sources. Numbered for convenience in distribution, October 16, 1916.

43413 to 43421.

From Tierras de Loba, Bolivar, Colombia. Seeds collected by Mr. H. M. Curran. Numbered October 17, 1916. Quoted notes by Mr. Curran unless otherwise indicated.

43413. Alibertia edulis A. Rich. Rubiaceæ.

"(Nos. 42 and 336.)" A tropical and extratropical shrub found in Central and northern South America, with white flowers. The yellow fruit, which is about the size of a small lemon, is called *Marmeladinha* and the entire plant is called *Puruhy*, both of these being Brazilian names. The fruit is edible and very agreeable in taste. (Adapted from *Mueller, Select Extra-Tropical Plants*, from *Pittier, Plantas Usuales de Costa Rica, p. 110*, and from *Correa, Flora do Brazil, p. 112.*)

43414. Bombacopsis sp. Bombacaceæ.

"(No. 29.)" The species of this genus are from tropical America and are described as medium-sized deciduous trees, either spiny or unarmed, with five to seven leaflets in each leaf. The white or purplish flowers occur in loose terminal panicles. The fruit is a woody capsule, dehiscent, with dense wool inside, and the seeds are subglobose and small. (Adapted from *Pittier, Contributions from the U. S. National Herbarium, vol. 18, p. 162, 1916.*)

43415. Brownea boliviensis Pittier. Cæsalpiniaceæ.

"(No. 34.) *Arisa.* Low shrub or small tree with red flowers; very ornamental."

43416. Cassia grandis L. f. Cæsalpiniaceæ.

"(No. 18.) *Cando dunga.* Ornamental tree with pink flowers and large fruit; seeds embedded in edible paste. From the Magdalena River; cultivated in Bolivar."

43417. Cedrela fissilis Vell. Meliaceæ. Cedro.

"(No. 14.)" A tree with pinnate leaves 10 to 15 inches long, densely pubescent beneath, and 18 to 24 opposite, nearly sessile leaflets. The panicles of whitish flowers are longer than the leaves, and the fruit is a dehiscent capsule containing many flat, winged seeds. According to Franceschi, it does better at Santa Barbara than any other species of this genus. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 697.*)

43418. Clavija sp. Theophrastaceæ.

"(No. 39.) A low shrub with edible, small, dry, yellow pods. Seed pulp edible."

43413 to 43421—Continued.

43419. ENTADA POLYSTACHYA (L.) DC. Mimosaceæ.

"(No. 25.) *Bejuco de garza.*" A woody vine, entirely glabrous, with bipinnate leaves and terminal panicles of white almost sessile flowers. Most of these flowers, which are about a millimeter long, fall immediately after opening, only a very few forming fruit. The smooth, slightly curved pod reaches 9 or 10 inches in length. Seeds oval, compressed, with calloused margins. (Adapted from *DeCandolle, Memoires sur la Famille des Légumineuses, pp. 421 and 434–436.*)

43420. PITHECOLOBIUM LIGUSTRINUM Klotzsch. Mimosaceæ.

"(No. 5.) *Payandé.*" A stout tree found in the hot regions of Colombia, called by the natives *payandé* in Magdalena and *gallinero* in Socorro. (Adapted from *Cortés, Flor de Colombia, p. 144.*)

This plant is without spines or thorns, and the leaves are composed of only one pair of leaflets, with oblong-lanceolate pinnæ. The flowers occur in spikes, are slender and glabrous, and the pods are flattened. (Adapted from *Bentham, London Journal of Botany, vol. 3, p. 213.*)

43421. STYLOGYNE RAMIFLORA (Oerst.) Mez. Myrsinaceæ.
(*Ardisia ramiflora* Oerst.)

"(No. 46.) May be valuable possibly as a dye plant."

A woody plant, with dark, terete, smooth branches and papery, short-petioled, entire, oblong-lanceolate acute leaves. The sessile axillary panicles of 5 to 10 flowers are in umbellike clusters at the end of the branches. The fruits, about the size of those of the genus Piper, are subglobose drupes. In habit this species is close to *Stylogyne cauliflora* and S. *longifolia,* differing in the inflorescence. (Adapted from *Oersted,* in *Videnskabelige Meddelelser Naturhistoriske Forening Kjöbenhavn, p. 132.*)

43422. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received October 14, 1916.

"(No. 26a.) Large white *perulero.* Undoubtedly one of the very best varieties of chayote or güisquil grown in Guatemala. Its attractive appearance, smooth surface, freedom from spines and deep sutures, and its excellent quality make it seem worthy of a careful trial in the southern United States. This variety belongs to the class known as *perulero,* or Peruvian chayote, a group which includes a good many small to medium sized smooth varieties, as distinguished from the *güisquiles* proper, larger fruits, usually with sutures on the surface and often spiny. This large white *perulero* is considered of superior quality, the flavor being very delicate. Owing to the absence of spines and sutures it is very easily prepared for the table." (*Popenoe.*)

43423. MIDA ACUMINATA (R. Br.) Kuntze. Santalaceæ.
(*Fusanus acuminatus* R. Br.) **Quandong.**

From Sydney, Australia. Seeds presented by Mr. Fred Turner, of the Linnean Society, through the American consul general. Received October 9, 1916.

"Var. *chrysocarpa.* A rare Australian tree. From an economic point of view the yellow quandong is a fruit superior to the red quandong and grows under precisely similar climatic conditions." (*Turner.*)

A beautiful evergreen tree, up to 30 feet in height, with opposite lanceolate leaves, mostly 2 or 3 inches long, and rather numerous insignificant flowers appearing on small terminal branches. The reddish globular fruits are about three-fourths of an inch in diameter and are eaten as preserves and jelly and in the dried condition. The kernels, which are spherical, are quite palatable and so full of oil that they will burn entirely away with a clear light. The tree, when full of fruits, is decidedly ornamental. The bark contains a large amount of tannic acid, and the wood is used for turnery, carving, and cabinetwork. In cultivating this tree it is best raised from seeds planted in the places where it is intended that the trees are to grow permanently. This tree is found throughout Australia, except Tasmania and Queensland. (Adapted from *F. Turner, Sydney Morning Herald, December 16, 1911.*)

43424. VIROLA SURINAMENSIS (Roland) Warb. Myristicaceæ.
(*Myristica surinamensis* Roland.) **Ucuúba.**

From Para, Brazil. Seeds presented by Mr. George H. Pickerell, American consul. Received October 16, 1916.

"Myristicaceæ are more important as timbers than the Annonaceæ, in spite of being represented by a much smaller number of species. The commonest species of the Amazon region are *ucuúba branca* (*Virola surinamensis* Warb.) and *ucuúba vermelha* (*Virola sebifera* Aubl.). The first, especially, is one of the most useful trees of the Amazon region, not only for its easily worked moderately hard wood, but also for its seeds, which furnish a kind of vegetable wax rich in stearin. While the *ucuúba branca* is found principally in the tillable plains, it is not excluded from the uncultivated parts of the country; the *ucuúba vermelha*, which is distinguished by its large leaves and smaller fruits, is a tree of the dry lands and is found principally in the forests. Both these species, especially when young, have a characteristic manner of growth, with slender whorled branches furnished with regularly distichous leaves. The regularity of its branching reminds one of the European conifers. Without doubt other Amazonian species of Virola and probably also some species of Iryanthera furnish wood which could be utilized, but I have no positive knowledge in regard to this." (*J. Huber, Mattas e Madeiras Amazonicas, Boletim de Museu Goeldi, vol. 6, p. 173.*)

The wood of this Brazilian tree is used for interior work and general carpentry. The bark is medicinal and the fruits contain 55 per cent of myristin, a waxy substance of the consistency of beef tallow, used in the trade for candles and soap. (Adapted from *Correa, Flora do Brazil, p. 70.*)

43425 to 43440.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received October 14, 1916. Quoted notes by Mr. Popenoe.

43425. PRUNUS SALICIFOLIA H. B. K. Amygdalaceæ. Capuli.

"(No. 27a. Mazatenango, Guatemala, September 27, 1916.) *Cereza.* Seeds of a wild cherry brought to the market of Mazatenango from the tierra fria, or high lands.

"In the highlands of Guatemala, at elevations of 4,000 to 9,000 feet, occurs, both wild and cultivated, a fruit which possesses more than ordinary interest to those occupied with the cultivation and improve-

43425 to 43440—Continued.

ment of tropical and subtropical fruits. This is the wild cherry, *Prunus salicifolia* H. B. K., commonly known as *cereza* among Spanish-speaking Guatemalans and as *capulin* by the Indians. While not a tropical species, that is, not adapted to the tropical littoral, it is distinctly subtropical in nature and may perhaps be found to thrive in such sections as the extreme southern portion of the United States and similar regions bordering upon the Tropics, as well as in the Tropics themselves, when grown at elevations of a few thousand feet. In its present wild state a fruit of fairly good quality, it would seem that with a little attention on the part of plant breeders it might become a most valuable addition to the list of fruits suitable for moist subtropical countries. Arid or semiarid sections, such as California, produce European cherries, of the Bigarreau type, to perfection, but as yet there is no cherry for the moist subtropical regions, such as Florida, northern India, and southern Brazil. It is in such regions that attention should be devoted to this species.

"As commonly seen in the Guatemalan highlands, this species is an erect tree, somewhat slender at times, reaching a height of about 30 feet, the trunk stout, occasionally as much as 3 feet thick, and the bark rough and grayish. The young branchlets are dotted with minute grayish lenticels. The leaves, which are borne upon slender petioles three-quarters of an inch long, are commonly 4½ inches in length, 1¼ to 1½ inches in breadth at the widest point, oblong-lanceolate in outline, with a long slender tip. The upper surface is dull green, the lower surface glaucous, while the margin is rather finely serrate. The flowers, which are produced from January to May, are white, about three-eighths of an inch broad, very numerous, on slender racemes 2 to 4 inches in length. As many as 15 or 20 fruits sometimes develop on a single raceme, but many drop off before reaching maturity, with the result that two to five ripe fruits are commonly found on each raceme. The season of ripening in Guatemala is from May to September—a remarkably long period. The ripe fruits, which are slightly oblate in form and up to three-quarters of an inch in diameter, separate readily from the short fruit stalks, leaving the green 5-toothed calyx attached to the fruit stalk in every instance. In color the fruit is a deep, glossy maroon-purple. The skin is thin and tender, though sufficiently firm so that the fruit is not easily injured by handling, and the flesh is pale green, meaty, but full of juice. The flavor is sweet, suggestive of the Bigarreau type of cherry, with a trace of bitterness in the skin. The stone is a trifle large in comparison to the size of the fruit, being about the same size as in some of the cultivated cherries of the North, whose fruits are considerably larger than those of this species. Cultivation, however, would probably increase the bulk of the edible portion of the fruit without greatly increasing the size of the stone. It may be remarked that trees of this species which are found "in cultivation" in Guatemala are merely growing in dooryards, and do not receive any of the attention connoted by the word "cultivation" as it is commonly understood by European and North American horticulturists. Pruning is never practiced, fertilizers are not applied, the soil is not tilled, and no water is supplied during the long dry season.

"Pleasant to eat out of hand, this cherry can also be eaten in various other ways, stewed, made into preserves, or used for the manufacture of

43425 to 43440—Continued.

jam. In Guatemala it is most commonly eaten as a fresh fruit or made into a sweet preserve. While, naturally enough, it can not be claimed that this cherry is equal to any of the excellent cultivated varieties of the North, which have been produced by generations of selection and vegetative propagation, it must be said in all fairness that it is a fruit of remarkably good quality for one which has never had the benefit of intelligent cultivation and has been propagated only by seed. When put into the hands of intelligent horticulturists in a region suited to its cultivation and subjected to a few generations of selection it should become a fruit worthy of taking rank alongside its relatives of northern orchards."

For an illustration of this wild cherry, see Plate I.

43426. ANNONA PURPUREA Moc. and Sessé. Annonaceæ. **Soncoya.**

"(No. 28a. Seeds procured at Escuintla, Guatemala, September 22, 1916.)

"The *soncoya* (here called *soncuya*, *suncuya*, or rarely *chincuya*) is a remarkable species of Annona which appears to be fairly common in the foothills of the western slope of Guatemala. Fruits and trees were seen from Escuintla to Ayutla, on the Mexican frontier, the elevation varying from 200 to 1,200 feet. The *soncoya* is an immense fruit, often larger than a child's head, and covered with short conical protuberances. It is almost perfectly spherical in form, measures about 6 inches in length, and weighs 3 pounds or more. In color it is a light russet brown, sometimes greenish; the protuberances are about one-fourth of an inch long, corky, and sharply pointed. The rind also is corky, about one-fourth of an inch thick, rather pliable, granular, and easily broken. The flesh is pale orange, cottony in texture, rather juicy and with an aroma and flavor almost identical with that of the North American papaw (*Asimina triloba*). The seeds are very numerous, brown, shaped like those of the cherimoya, but much larger, being fully 1 inch long.

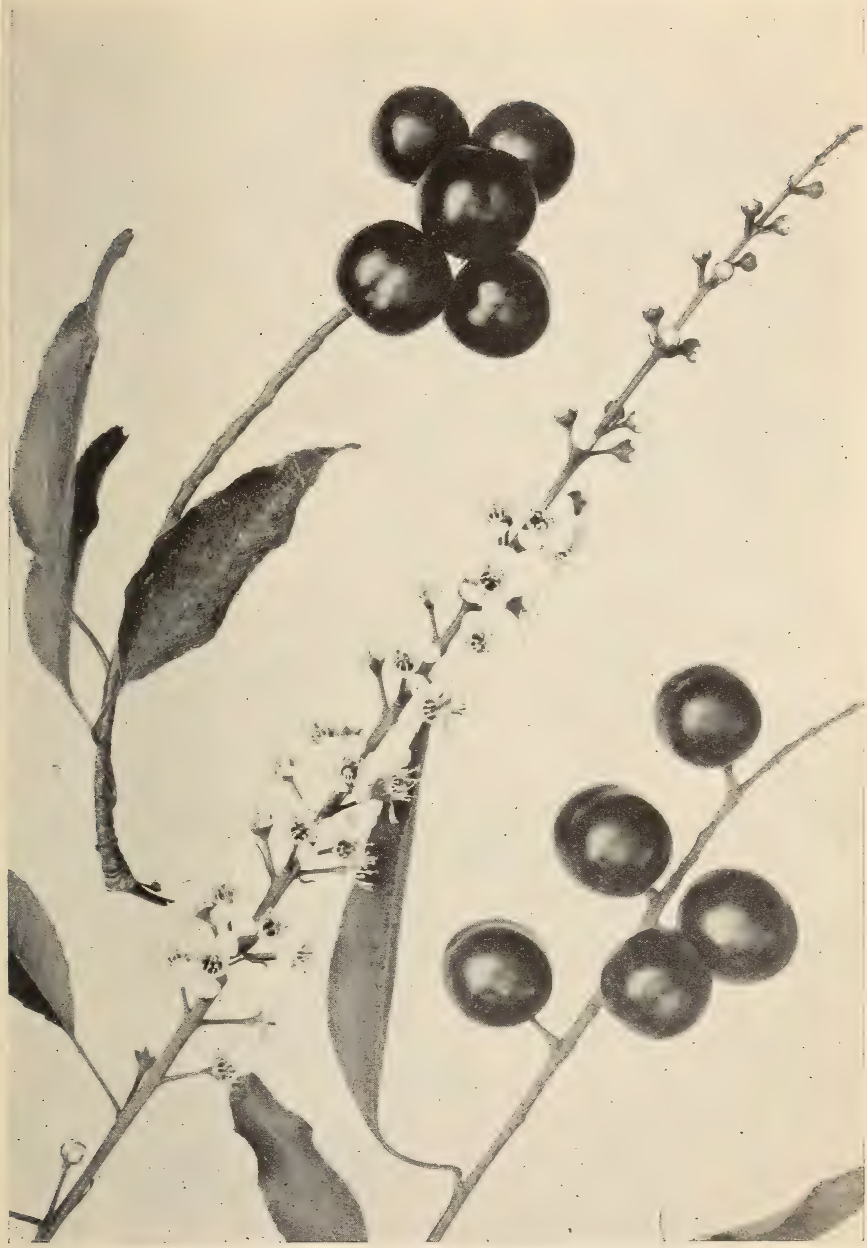
"The tree is grown in dooryards and is said also to occur wild in the forests, but up to the present I have only seen it in cultivation. It grows to about the same size as the cherimoya and is of the same form, but the foliage is much larger and makes the tree a striking object in gardens. The fruit is common in markets and fruit stalls and seems to be generally used by the Indians, though an overindulgence in it is said to superinduce *paludismo*, or malarial fever.

"The tree grows on deep loamy, usually moist soils. It probably is suited only to regions with a very warm climate. If it succeeds at all in Florida it will probably be only in the extreme southern end of the State.

"The *soncoya*, which is unknown in cultivation outside of Central America, is a fruit of much better quality than most of the wild Annonas. It seems to be especially worthy of attention because of its thick outer rind, which makes it easier to handle than the cherimoya."

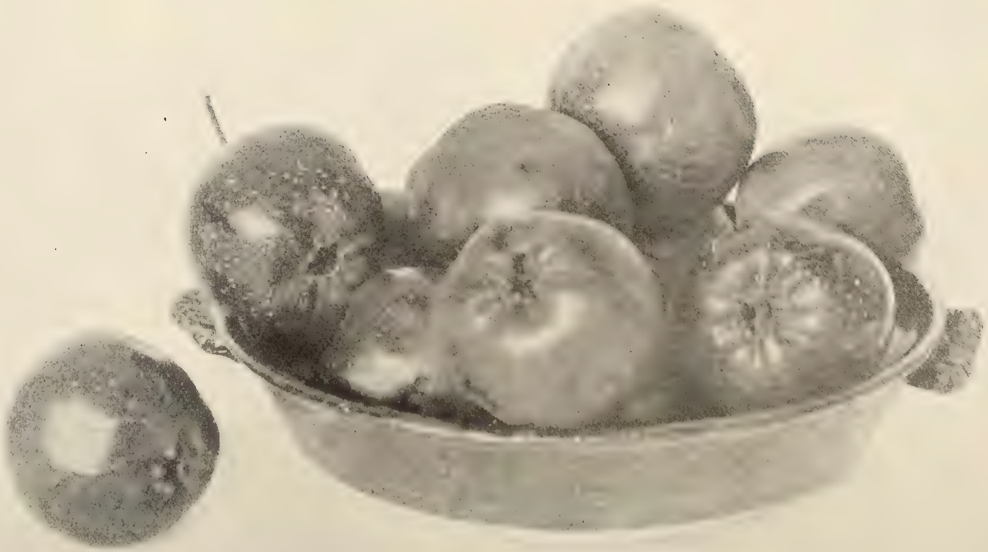
43427. SICANA ODORIFERA (Vell.) Naud. Cucurbitaceæ. **Melocoton.**

"(No. 29a. Mazatenango, Guatemala, September 23, 1916.) A peculiar melon called here *melocoton* (peach). It is not commonly cultivated and is rarely seen in the market. The fruit is cylindrical, a foot in length, about 4 inches in diameter, with a smooth surface shining black in color. On cutting it in halves lengthwise one finds a narrow zone of flesh next the skin and the rest of the space occupied principally by seeds, which resemble considerably those of the watermelon. The flavor is rather



THE WILD CHERRY OF GUATEMALA. (PRUNUS SALICIFOLIA H. B. K., S. P. I. No. 43425.)

The cereza, or wild cherry, is common in the highlands of Mexico and Central America. Its fruits are of pleasant flavor and almost as large as some of the cultivated cherries of temperate regions. Because of its adaptability to subtropical conditions this species merits introduction into the southern United States and similar regions. (Photographed, natural size, by Wilson Popenoe, May 6, 1917, at Antigua, Guatemala; P17279FS.)



A TROPICAL RELATIVE OF THE APPLE. (CRATAEGUS STIPULOSA (H. B. K.) STEUD., S. P. I. No. 43430.)

The manzanilla grows wild in the highlands of Guatemala. Several closely allied species are common in Mexico. The fruits are as large as crab apples, deep yellow flushed with red, and attractive in appearance. In preserved form they are popular. They merit cultivation in other regions where conditions are subtropical and not favorable to the apples of the temperate zone. (Photographed by Wilson Popenoe, Nov. 16, 1917, at Antigua, Guatemala; P17422FS.)

43425 to 43440—Continued.

strong and suggests that of a cantaloupe. Not to be recommended for cultivation as a comestible, but may be of interest to those studying the cucurbits. Seeds from one melon."

See also S. P. I. No. 43440.

43428. Carica papaya L. Papayaceæ. **Papaya.**

"(No. 30a. City of Guatemala, Guatemala, September 20, 1916.) Red-fleshed papaya. A remarkable variety of papaya which seems to be fairly common in the markets here and is said to come from Escuintla. The fruit from which these seeds were taken was cylindrical in form, 13½ inches long by 6 inches thick, pointed at the apex. The flesh was thick, varying from 1½ to 1¾ inches, firm, and not at all musky in flavor. It was rather lacking in sweetness, but this may have been due in part to the fact that the fruits are sometimes picked before fully ripe, to permit shipment. The great peculiarity of this variety lies in the color of the flesh, which was a deep reddish salmon. The seeds were oval in form and quite numerous. Other specimens of this same variety which have been seen in the market were similar to the one described but smaller. This interesting form should be tried in connection with the investigations in papaya culture now being carried on in southern Florida."

43429. Byrsonima crassifolia (L.) H. B. K. Malpighiaceæ. **Nance.**

"(No. 31a. City of Guatemala, Guatemala, September 20, 1916.) *Nance*, a small tree frequently seen in gardens, especially in villages along the west coast, where it is a common dooryard tree. It is erect, with a slender trunk sometimes dividing near the base and up to 35 feet in height. The leaves are oblate-elliptic to elliptic, acute, 3 to 4 inches long, thickly chartaceous, deep green and glabrous above, covered with thick tawny hairs beneath. The fruits are borne in short terminal racemes 2 to 3 inches long. Individually they are the size of cherries, bright yellow in color when fully ripe. The single rough seed is about the size of a cherry stone. The flavor is acid, sometimes rather strong. The *nance* grows here at elevations from sea level up to 4,000 feet or more, usually on rich loamy soils. It may succeed in California when grown at such places as Santa Barbara which do not experience a great deal of frost, and it ought to succeed in southern Florida."

43430. Crataegus stipulosa (H. B. K.) Steud. Malaceæ. **Manzanilla.**

"(No. 32a. Seeds procured in Mazatenango, Guatemala.) *Manzanilla*, a common fruit in the markets of Guatemalan towns and villages, coming, it is said, from the highlands. I have seen no plants as yet. The fruits look like small apples; they are nearly spherical in form, 1 to 1¼ inches in diameter, deep yellow in color, with russet dots and one cheek frequently blushed with red. The thin skin incloses a rather dry, mealy pulp and three irregularly shaped seeds. The flavor resembles that of some of the northern haws, but is, perhaps, better; the fruit is extensively used here for the preparation of dulces of various sorts, such as jams and jellies. This plant would probably succeed both in California and Florida."

For an illustration of the manzanilla, see Plate II.

43431. Persea americana Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

"(No. 33a. City of Guatemala, Guatemala, September 29, 1916.) Seeds of a curious variety of avocado found in the market. It is said to have

43425 to 43440—Continued.

come from Antigua. It appears to belong to the Guatemalan race, but may possibly be a cross between this and some other race. It is not to be recommended as a fruit, but is of interest in connection with the experiments now being carried on to obtain the best stocks for the commercial varieties of avocado. The fruit is unusually small for this region, being no more than 2½ inches in length and frequently not more than 2 inches. It is obovate or broadly pyriform in outline. The surface practically smooth and shining purplish maroon in color. The skin is quite thin, but thicker than is common in the Mexican race. The flesh is pale green, very rich in flavor, but lacking in quantity, due to the very large size (comparatively) of the seed, which has the characteristic closely adhering seed coat of the Guatemalan race."

43432. HUFELANDIA ANAY Blake. Lauraceæ. **Anay.**

"No. 34a. Mazatenango, Guatemala, September 23, 1916.) Seeds of an interesting species of Persea which occurs in this region as a large forest tree and is called *anay* by the natives. It so closely resembles an avocado of the Mexican race in the external appearance of the fruit as to lead one to suspect at first that it must be a form of *Persea americana*, but on a closer examination of the tree and fruit one finds numerous characters which indicate that it must be entirely distinct from Persea.

"In clearing the forest for planting coffee, a few large trees are left to provide shade for the coffee plants, and it was due to this fact that we found the *anay*. Two large trees are standing close to the entrance of the finca 'El Compromiso,' about one-half mile from Mazatenango. Others are said to occur in the forest and are known to the natives, who eat the fruits in the same way as avocados and consider them a variety of avocado, '*tipo de aguacate*,' as they say.

"The *anay* is a tall, rather slender tree, reaching a great height in the forest. The two which were seen were between 60 and 70 feet in height. The bark is nearly smooth and of a rich red-brown color, grayish in places. The young branchlets are light brown, finely pubescent. The leaf blades are broadly elliptic to oblong-lanceolate in outline, 8 to 13 inches long, 3 to 6 inches broad, acute to shortly acuminate at the apex, rounded to broadly acute at the base, rigidly chartaceous, bright green and glabrous above (with the exception of the costa and primary transverse veins, which are sparsely hairy), the lower surface being slightly lighter in color and glabrate. The young leaves are softly pubescent below and sparsely hairy above. Petiole 1½ to 2½ inches long, terete, slender, but swollen just below the point of union with the lamina. The foliage when crushed has no aromatic odor, like that of the Mexican race. The fruits ripen in August and September. In form they are slender pyriform, sometimes curved and sometimes pointed at the apex. Often the neck is long and sharply defined. The body of the fruit is slightly compressed on two sides. The length varies from 4 to 6 inches. The surface is smooth, glossy, and purplish black. The epicarp is exceedingly thin and membranous and adheres closely to the firm, oily flesh, which is divided into two zones of color, the outer being pale green and the inner, which is of the same thickness as the outer, a greenish cream color. The two zones are more sharply defined than they ordinarily are in the cultivated avocados. The flavor of the flesh is rich

43425 to 43440—Continued.

and bland, like that of a very good avocado, but with a faint suggestion of sweetness. The outer seed coat is developed into a thick husk which may practically be considered an endocarp. Within lies the seed, which is long and pointed, with the inner seed coat, thin and membranous, surrounding the cotyledons closely. While the outer seed coat is extended clear to the base of the fruit, the inner does not always reach the apices of the cotyledons. The embryo lies immediately at the base of the cotyledons, while the avocado has the embryo located some distance above this point. From a practical standpoint the *anay* can not be considered of great value, inasmuch as the flesh is scanty in quantity. If the flesh were more abundant its excellent flavor would make the fruit of great value. The fruit falls to the ground while still hard and requires two or three days to soften and be in condition for eating. The seeds germinate on the ground beneath the trees, and the young plants start off lustily. The larva of some insect attacks the fallen fruits and tunnels through the seeds. Very few fruits found on the ground had not been attacked in this manner. The remarkable similarity of this species to the cultivated avocado and the fact that its fruit is edible and is used by the natives make it a subject of particular interest in connection with the study of the cultivated avocados. It is to be hoped that specimens can be reared and fruited in the United States. The region where the tree is found lies at an elevation of about 1,200 feet and is quite moist. On this account it seems doubtful whether the *anay* will succeed in California. It might be tried in the most protected localities. In southern Florida its chances of success seem good."

For an illustration of the anay, see Plate III.

43433. HUFELANDIA ANAY Blake. Lauraceæ. Anay.

"(No. 34. Mazatenango, Guatemala.) *Anay.* Young seedlings collected under a large tree in the finca 'El Compromiso,' where the fruit had fallen. See 34a [S. P. I. No. 43432] for a description of this plant."

43434 to 43436. NEPHROLEPIS spp. Polypodiaceæ. Fern.

43434. "(No. 36. Mazatenango, Guatemala, September 23, 1916.) *Cola de quetzal* (quetzal's tail). Plants of a fern very common on large forest trees of this region (1,200 feet elevation). It grows usually at some height above the ground. The fronds hang down to a length of 6 feet or more."

43435. "(No. 37. Mazatenango, Guatemala, September 23, 1916.) *Palmito.* Plants of a coarse fern with stout rootstocks, which grows in this region (1,200 feet elevation) on the trunks of large forest trees. The pinnæ are long and rather coarse. Commonly grows closer to the ground than the *Cola de quetzal* (No. 36), being found within 8 to 10 feet."

43436. "(No. 38. Mazatenango, Guatemala, September 23, 1916.) Plants of a small fern found clinging to the trunks of large forest trees, usually close to the ground and in very moist situations."

43437. PASSIFLORA LIGULARIS Juss. Passifloraceæ. Sweet granadilla.

"(No. 43a. Guatemala, Guatemala, October 7, 1916.) *Sweet granadilla.* Seeds of a species of Passiflora cultivated in the highlands of Guatemala, up to elevations of 6,000 feet or more. The fruit is the size of a hen's egg, orange yellow in color when fully ripe, with a thick, brittle

43425 to 43440—Continued.

shell inclosing a large number of small, thin seeds surrounded by white gelatinous pulp. The flavor is delicate, aromatic, almost perfumed, certainly more delicate and agreeable than most of the other Passifloras. This species should be given a more thorough trial in Florida and California than has been accorded it in the past."

For an illustration of the granadilla of Guatemala, see Plate IV.

43438. Rubus tuerckheimii Rydb. Rosaceæ.

"(No. 44a. City of Guatemala, Guatemala, October 7, 1916.) *Mora.* Seeds of a wild species of Rubus which is common in the vicinity of San Lucas at an altitude of nearly 7,000 feet. The fruits greatly resemble our cultivated blackberries, being about the same size, with the individual drupelets like those of the blackberry, but slightly lighter in color. The flavor is acid, suggesting both the blackberry and the loganberry. The fruit is gathered from the wild plants and brought by the Indians to the market of the city of Guatemala. It is used for preserves and for stewing."

43439. Achradelpha viridis (Pittier) O. F. Cook. Sapotaceæ.

Green sapote.

"(No. 46a. Palin, Guatemala, October 7, 1916.) *Injerto*, or *green sapote.* Seeds from fruits purchased in Palin, but said to have been grown at Santa Maria de Jesus, between Palin and Antigua. The *injerto* is a common tree in this part of Guatemala. Unlike its near relative, the sapote (*Achradelpha mammosa*), which seems to thrive only at comparatively low elevations in the Tropics, the *injerto* is grown as high as 5,000 or 6,000 feet, and therefore should stand a better chance of succeeding in California and Florida than the sapote, which has so far been a failure in those States. The tree grows to a height of about 40 feet in this region and has long, slender leaves suggesting those of the sapote. The fruits vary in shape, but are commonly round to oval, often pointed at the tip. They are 2 to 3½ inches in diameter, smooth, dull yellow-green in color, sometimes almost dull yellow. The skin is not thick. It adheres closely to the flesh, which is red-brown in color, soft and melting, sweet, with a pleasant flavor somewhat resembling that of the sapote, but better. The large seed (sometimes there are two) is hard and polished, deep brown in color, and easily removed from the pulp."

For an illustration of the green sapote, see Plate V.

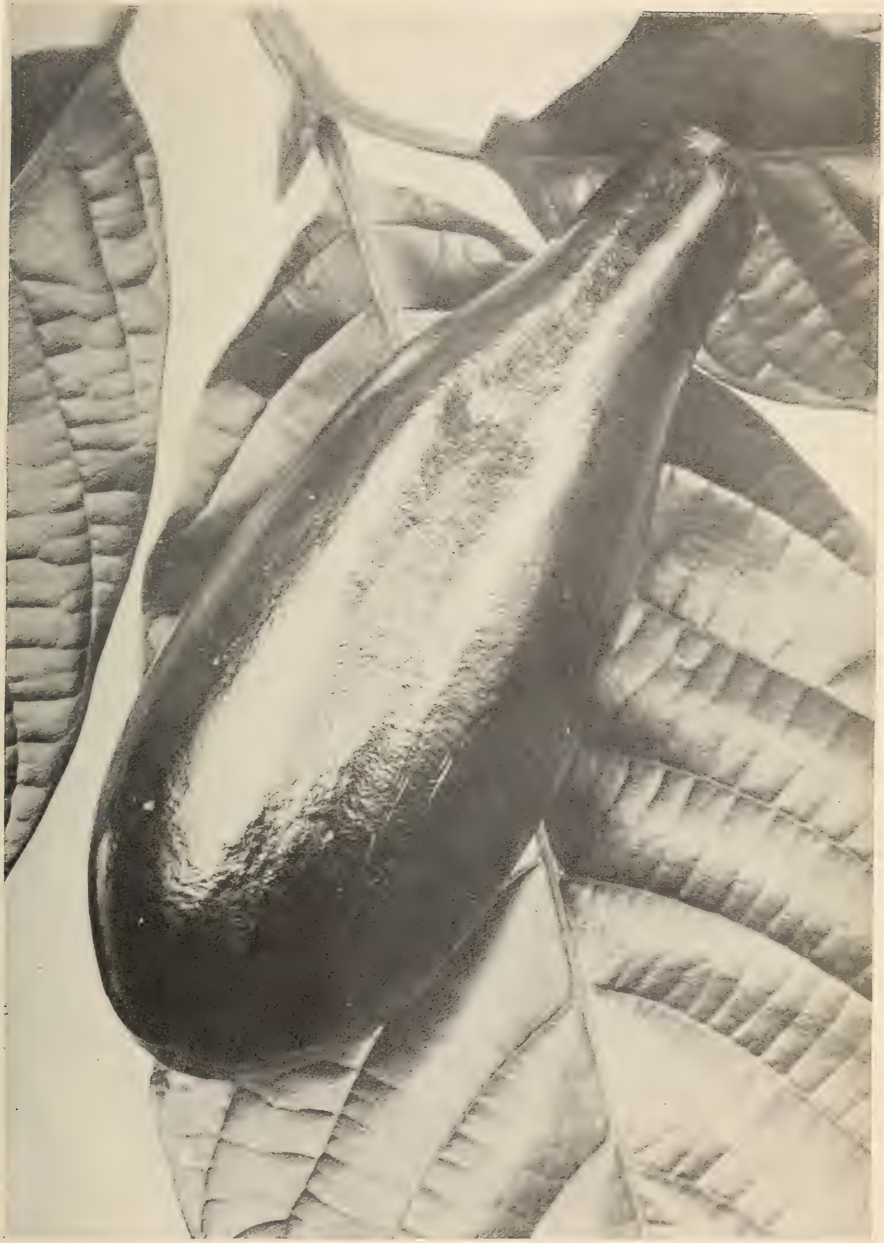
43440. Sicana odorifera (Vell.) Naud. Cucurbitaceæ. **Melocoton.**

"(No. 47a. Guatemala, Guatemala, October 7, 1916.) Seeds of a peculiar melon purchased in the market of Guatemala, but said to have come from Escuintla. It is identical with the one sent in under No. 29a [S. P. I. No. 43427] except in color; 29a was shining black, while this variety is bright red. See 29a [S. P. I. No. 43427] for description."

43441. Undetermined. Myrtaceæ.

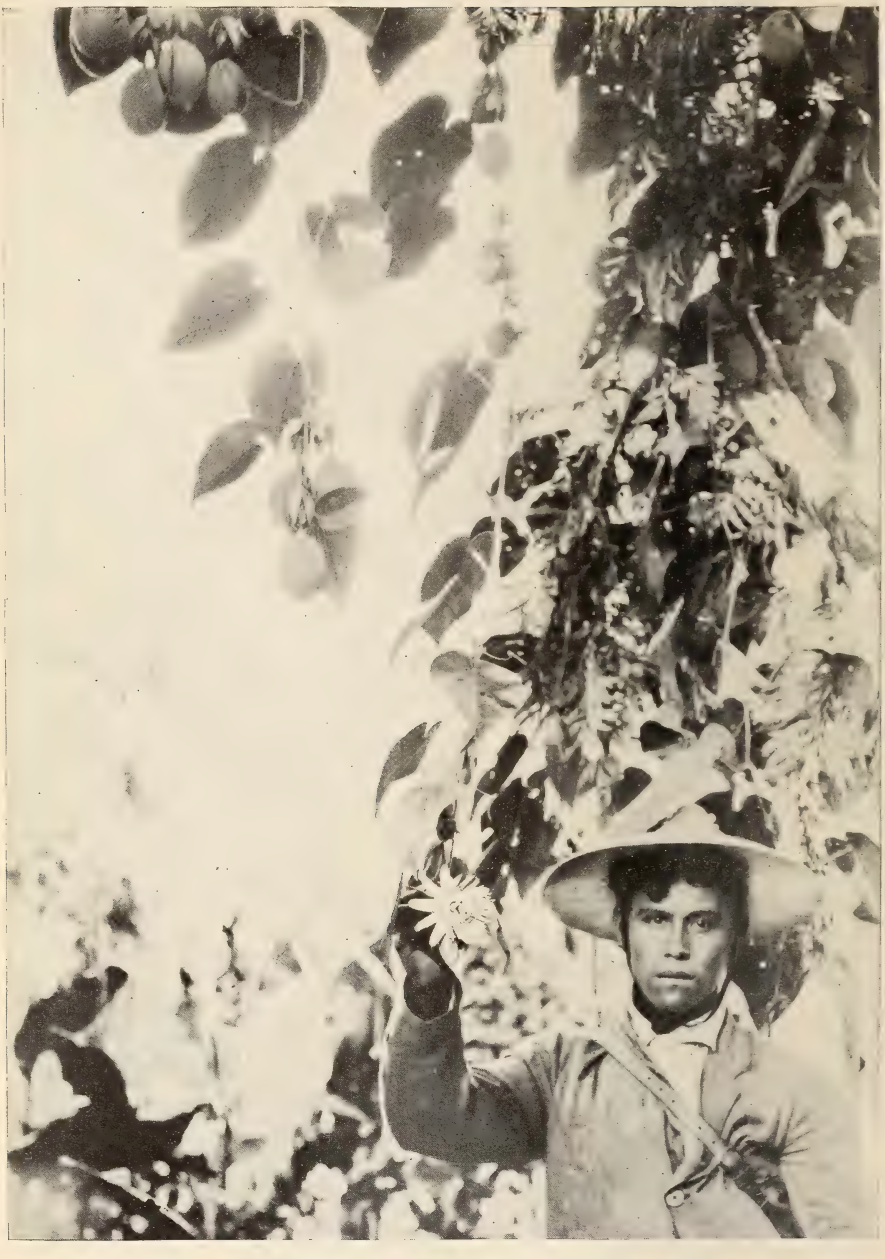
From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received October 18, 1916.

"A long black plum, quite good, but a little astringent (some sorts more, some less). It is a stately, very large, dense, evergreen tree; leaves large, dark



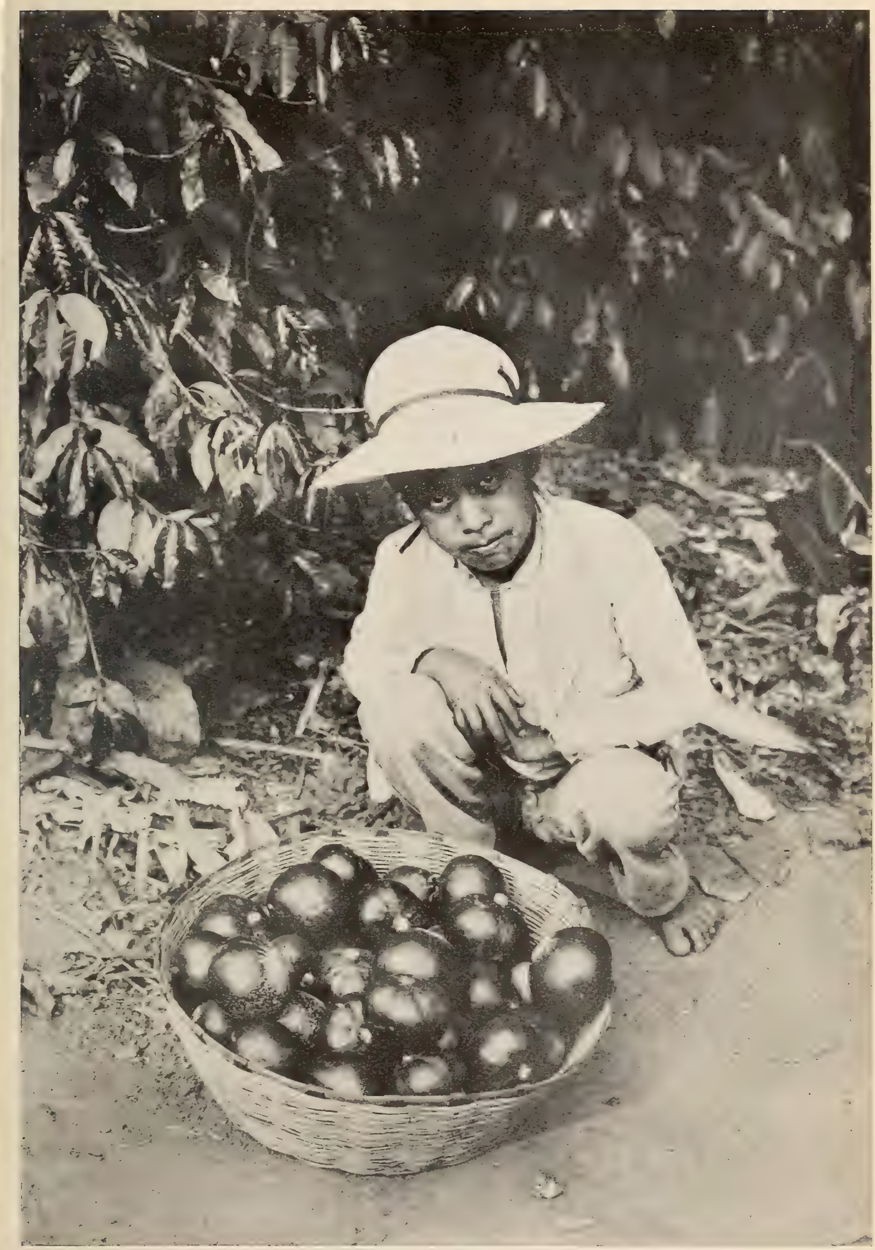
THE ANAY, A NEW RELATIVE OF THE AVOCADO. (HUFELANDIA ANAY BLAKE, S. P. I. No. 43432.)

The anay grows wild in northern and western Guatemala. Its fruit resembles an avocado of the Mexican race in general appearance. The flavor is exceedingly pleasant, but the flesh is rather scanty. This species may prove of value in connection with avocado breeding in the United States. (Photographed by Wilson Popenoe, Sept. 23, 1916, at Mazatenango, Guatemala; P16809FS.)



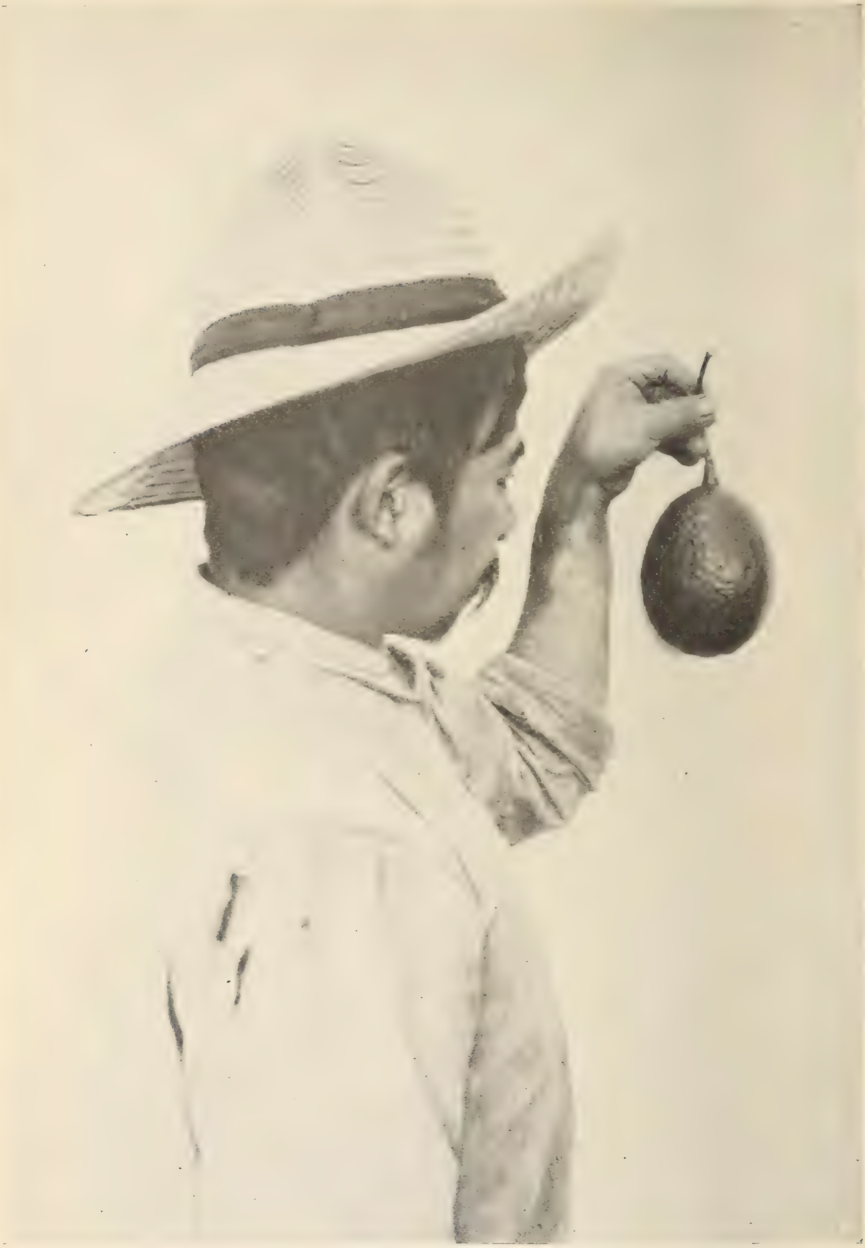
THE GRANADILLA OF GUATEMALA. (PASSIFLORA LIGULARIS JUSS., S. P. I. NO. 43437.)

Several species of Passiflora are commonly known as granadilla in tropical America. The one here shown is grown in the Guatemalan highlands. It is found at high altitudes; hence, it should be sufficiently frost resistant for cultivation in California and Florida. The white juicy pulp is sweet, delicately flavored, and faintly perfumed. (Photographed by Wilson Popenoe, Oct. 19, 1916, at San Lorenzo del Cubo, Guatemala; P16870FS.)



THE GREEN SAPOTE, A RARE TROPICAL FRUIT. (ACHRADELPHA VIRIDIS (PITTIER) O. F. COOK, S. P. I. NO. 43439.)

The green sapote, or injerto, is found in the Guatemalan highlands. It is much superior in quality to its relative, the sapote or mamey sapote (*Achradelpha mammosa*). The fruits have orange-brown flesh inclosing one or two large seeds; the sweet, rich flavor resembles that of the sapodilla. The tree will probably succeed in Florida and will certainly grow in Porto Rico, Hawaii, and the Philippines. (Photographed by Wilson Popenoe, Apr. 2, 1917, at San Cristobal, Alta Vera Paz, Guatemala; P17192FS.)



THE LAMAT AVOCADO, FROM THE HIGHLANDS OF GUATEMALA. (PERSEA AMERICANA MILL., S. P. I. NO. 43476.)

The Guatemalan avocados are remarkable for their fine quality and their habit of ripening in winter. The variety here shown, Lamat, comes from Amatitlan and is typical of the Guatemalan race. The form is attractive. The weight, about 1 pound, is desirable from a market point of view. Since the Guatemalan avocados are hardier than the West Indian varieties heretofore grown in Florida, they will make it possible for Florida to market avocados in quantity during the winter and spring. (Photographed by Wilson Popenoe, Nov. 5, 1917, at the city of Guatemala, Guatemala; P17401FS.)

bluish green; fruits bright yellow till they ripen, when they turn shining black in a short time. Tree loaded with yellow and black fruits for many weeks; very prolific. Said to be very good for sweet preserves." (*Werklé.*)

43442 to 43444. PYRUS CHINENSIS × COMMUNIS. Malaceæ. Hybrid pear.

Plants grown at the Plant Introduction Field Station, Chico, Calif. Numbered on October 24, 1916, for convenience in distribution.

43442. Hybrid pear, P. I. G. No. 6587, tree 3, row 42. Raised by Dr. W. Van Fleet, in 1907, and presented to the Plant Introduction Field Station, December 22, 1909.

"Fruit large and of attractive pyriform shape, somewhat resembling *Bartlett*, but with a deep red cheek on yellow ground. Flesh fine grained, tender, and juicy, with but few granules, flavor sweet and pleasant, quality very good. Should make an attractive market pear, It is hoped the usual resistance to oriental pear blight will be shown by this hybrid variety." (*Van Fleet.*)

43443. Hybrid pear, from S. P. I. No. 28497, raised by Dr. W. Van Fleet. On account of differences in the fruits this plant and the following have been assigned new S. P. I. numbers.

Mr. J. E. Morrow describes the fruit of this one as follows: "Row 27, tree 7, fruit large, long, and pyriform; rough greenish skin, dotted; stalk 1½ inches long, set between lips, fleshy at the base; calyx large in shallow basin; flesh granular, coarse, juicy; a late pear of excellent size and shape, but very coarse."

43444. Hybrid pear from S. P. I. No. 28497. Mr. J. E. Morrow describes the fruit as follows: "Row 28, tree 4, in the test orchard. Fruit large size, roundish, oblate; very short neck; skin rough, irregular, dotted; basin broad, deep, and furrowed. Flesh coarse, but sweet and juicy. A pear of promise."

43445. PYRUS CALLERYANA Decaisne. Malaceæ. Callery's pear.

Plants grown at the Plant Introduction Field Station, Chico, Calif. Numbered on October 24, 1916, for convenience in distribution.

From a tree grown from seed introduced by Mr. George Compère, who collected it in 1908 in the vicinity of Hongkong, China. The parent tree from which these seedlings came is standing in the yard of Mrs. Lenora Williams, at Oroville, Calif. The plant may be described as follows: This wild Chinese pear is not uncommon in western Hupeh at an altitude of from 1,000 to 1,500 meters and is easily recognizable by its comparatively small crenate leaves and small flowers. This pear maintains a vigorous and healthy appearance under the most trying conditions and might prove to be a very desirable blight-resistant stock. Also the woolly aphis, which attacks other species of pears, has not been known to touch this species. (Adapted from *Compère, Monthly Bulletin, California State Commission of Horticulture, vol. 4, pp. 313–314,* and from *Rehder, Proceedings of the American Academy of Arts and Sciences, vol. 50, pp. 237–238.*)

"The male parentage of these seedlings is naturally uncertain, as the tree at Oroville might have been cross-pollinated by bees flying from European or other oriental pear trees in the vicinity." (*Fairchild.*)

43446. Garcinia mangostana L. Clusiaceæ. Mangosteen.

From Dominica, British West Indies. Secured through Mr. Joseph Jones, curator, Botanic Gardens. Received October 24, 1916.

"This delicious fruit is about the size of a mandarin orange, round and slightly flattened at each end, with a smooth, thick rind, rich red-purple in color, with here and there a bright hardened drop of the yellow juice, which marks some injury to the rind when it was young. As these mangosteens are sold in the Dutch East Indies, heaped up on fruit baskets or made up into long, regular bunches with thin strips of braided bamboo, they are as strikingly handsome as anything of the kind could well be, but it is only when the fruit is opened that its real beauty is seen. The rind is thick and tough, and in order to get at the pulp inside it requires a circular cut with a sharp knife to lift the top off like a cap, exposing the white segments, five, six, or seven in number, lying loose in the cup. The cut surface of the rind is of a most delicate pink color and is studded with small yellow points formed by the drops of exuding juice. As you lift out of this cup, one by one, the delicate segments, which are the size and shape of those of a mandarin orange, the light pink sides of the cup and the veins of white and yellow embedded in it are visible. The separate segments are between snow white and ivory in color and are covered with a delicate network of fibers, and the side of each segment where it presses against its neighbor is translucent and slightly tinged with pale green. As one poises the dainty bit of snowy fruit on his fork and looks at the empty pink cup from which it has been taken, he hardly knows whether the delicate flavor or the beautiful coloring of the fruit pleases him the more, and he invariably stops to admire the rapidly deepening color of the cut rind as it changes on exposure to the air from light pink to deep brown. The texture of the mangosteen pulp much resembles that of a well-ripened plum, only it is so delicate that it melts in one's mouth like a bit of ice cream. The flavor is quite indescribably delicious and resembles nothing you know of and yet reminds you, with a long aftertaste, of all sorts of creams and ices. There is nothing to mar the perfection of this fruit, unless it be that the juice from the rind forms an indelible stain on a white napkin. Even the seeds are partly or wholly lacking, and when present are so thin and small that they are really no trouble to get rid of. Where cheap and abundant, as in Java, one eats these fruits by the half peck and is never tired of them; they produce no feeling of satiety, such as the banana and the mango do, for there is little substance to the delicate pulp." (*Fairchild.*)

43447 to 43449.

From El Coyolar, Costa Rica. Seeds presented by Mr. Carlos Wercklé. Received October 20, 1916.

43447. Annona muricata L. Annonaceæ. Soursop.

"*Guanábana.* From a good-sized fruit with only 17 seeds; a very good variety." (*Wercklé.*)

"One of the most valuable fruit trees of the Tropics. It is grown with especial excellence in Porto Rico and is common in the markets of Key West, whither it is shipped from the islands to the southward. A favorite drink is made from the juice, and the pulp yields excellent jelly, tarts, and preserves." (*W. E. Safford.*)

For further description, see Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 292.

43447 to 43449—Continued.

43448. Annona squamosa L. Annonaceæ. Sugar-apple.

"Delicious sherbets are made from its custardlike pulp, often with the addition of a little lemon juice, but it is never cooked or made into preserves or jelly, like the soursop. The fruit, when green, as well as the seeds and leaves, is used for destroying vermin; and in the West Indies the crushed leaves, in the form of poultices, are applied to ulcers and malignant sores. The root is a drastic purgative." (*W. E. Safford.*)

For further description, see Bailey, Standard Cyclopedia of Horticulture, vol. 1, pp. 294–295.

43449. Arachis hypogaea L. Fabaceæ. Peanut.

"*Cacahuete*, the variety from Rio Grande, which produces many pods with four perfect seeds. These seeds are from a very poor crop. Last year on the same land the pods were much larger, with four large seeds." (*Wercklé.*)

43450. Canarium amboinense Hochr. Balsameaceæ.

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received October 24, 1916.

This beautiful tree, which grows to a height of about 90 feet, so resembles *Canarium moluccanum* in general habit and in the leaves that the two can scarcely be distinguished, although the fruit is different. The bark is smooth and white. The fruit of this species is oblong, pointed at both ends, with the angles sharp toward the ends and somewhat flattened toward the middle. This tree is found in the island of Amboina, Celebes. (Adapted from *Hochreutiner, Plantae Bogoriensis Exsiccatae, p. 55.*)

43451 to 43461.

From Argentina. Collected by Mr. H. M. Curran. Received October 11, 1916.

43451 to 43453. Acacia spp. Mimosaceæ.

43451. Acacia furcata Gillies.

A glabrous, spiny shrub, with very remarkable stipular thorns, which are nearly of equal breadth throughout until they branch off at the apex into spreading horns. The leaves consist of three pairs of pinnæ, and each pinna consists of seven to nine pairs of pinnules. The white flowers appear in January, and the pods, which contain from five to eight seeds, are rather large, oblong, and flattened. The hard striped coffee-colored wood is not useful. In the Chaco Santafeción, Argentina, the shrub develops to a considerable size, but when the trunk is large it is usually decayed. This shrub occurs throughout the northern portion of Argentina. (Adapted from *Hooker, Botanical Miscellany, vol. 3, pp. 206–207*, and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, pp. 34, 35.*)

43452. Acacia praecox Griseb.

A stout tree, not very tall, well known in northern Argentina on account of its globose heads of aromatic flowers. The leaves consist of three to four pairs of pinnæ and 10 to 24 pairs of pinnules. The wood resembles that of *Ceratonia siliqua* L., or *St.-John's-bread,*

43451 to 43461—Continued.

forms excellent firewood, and is quite abundant. (Adapted from *Grisebach, Plantae Lorentzianae, p. 88*, and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 35.*)

43453. Acacia visco Lorentz.

A tree, native of northern Argentina, commonly unarmed, but occasionally with recurved thorns. The leaves consist of three to six pairs of pinnæ; the flowers are sessile. The walnut-colored, striped hard wood is much appreciated on account of its resistance to moisture. It is not abundant and is used for all kinds of carpentry. (Adapted from *Grisebach, Plantae Lorentzianae, p. 122*, and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 36.*)

"A timber tree which yields a very hard durable wood. It is a small tree of the dry regions and should be useful for planting in the mesquite areas of the Southwest." (*Curran.*)

43454. Chrysophyllum lucumifolium Griseb. Sapotaceæ.

Aguay. A tree found in Misiones and Corrientes, Argentina, with beautiful broad green leaves and axillary or lateral flowers. Only one seed matures in the oval fruit, which is 12 millimeters long. This tree sometimes attains considerable size, and the wood, which is flexible and easily split, is used for firewood and gunstocks. The fruit is edible and very sweet. (Adapted from *Grisebach, Plantae Lorentzianae, pp. 223–224*, and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 96.*)

43455. Enterolobium timbouva Mart. Mimosaceæ. Timbo.

"This is a very important timber tree and one of the most rapid-growing trees of the Tropics. Much appreciated in Buenos Aires as a shade tree. Reaches its best development in tropical forests, but endures cold and drought in a moderate degree." (*Curran.*)

A tree found throughout all northern Argentina and used as an ornamental in Buenos Aires. It is unarmed, and the leaves consist of two to five pairs of pinnæ and ten to twenty pairs of pinnules. The greenish flowers occur in large heads or clusters, and the coriaceous, indehiscent, kidney-shaped pods are fleshy within and contain elliptic seeds. These pods are called *orejas de negro* in Argentina. From the trunks canoes are made, and the beautiful striped wood is used for a great many purposes, such as general construction work and furniture, for paper pulp, and as a source of saponin. The bark and leaves are said to be poisonous to fish; the pods are used to remove stains from clothes, and the seeds appear to be poisonous. (Adapted from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 41*, and from *Correa, Flora do Brazil, p. 70.*)

43456. Ilex paraguariensis St. Hil. Aquifoliaceæ. Yerba maté.

"The Ilex is a plant of humid forest regions, but it will also endure the climate of Buenos Aires. It should be a good plant for Florida and perhaps the coast region as far north as the Cape Fear River, North Carolina. In nature it is a forest plant. In cultivation a light shade is often placed over the plants." (*Curran.*)

A small, bushy, evergreen tree with serrate alternate leaves, a native of Brazil, Paraguay, and the neighboring countries. The leaves are

43451 to 43461—Continued.

roasted and ground to make the Paraguay tea of commerce, which is said to possess the good properties of tea and coffee without their aftereffects. In the hospitals of Paris it is used as a stimulant. The yerba groves are located in remote regions and grow best on high land at an elevation of 1,000 to 2,000 feet in soft alluvial soil or soil rich in humus. The seed is very difficult to germinate and without special treatment requires a year before it will come up. An opinion prevails that these seeds will germinate only after being eaten by birds, and a substitute for the gastric juice of the bird has been sought. By a method in use at San Ignacio, Argentina, seedlings have been obtained in five weeks. This plant might be grown in Texas and California. (Adapted from *Friderici, Tropenpflanzer, 1907, pp. 776–783.*)

43457. LONCHOCARPUS sp. Fabaceæ.

The species of this genus are either trees or shrubs, with alternate leaves and opposite leaflets. The papilionaceous flowers are white, pink, or purple, and occur in simple or branched racemes. The membranous or coriaceous pods are flat and dehiscent, containing one to four, or rarely more, flat kidney-shaped seeds. An indigo is said to be obtained from this genus, but it is not known in the trade and is little cultivated. (Adapted from *Humboldt, Bonpland, and Kunth, Nova Genera et Species, vol. 6, pp. 182, 383,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1904.*)

43458. PIPTADENIA EXCELSA (Griseb.) Lillo. Mimosaceæ.
(*P. communis excelsa* Griseb.)

"An important timber tree; also planted as a shade tree in Buenos Aires." (*Curran.*)

An unarmed tree, almost 100 feet high, with 15 to 20 pairs of leaflets in each leaf and spikes of flowers 2 or 3 inches long. The pods are linear. The rather thin bark is not used in tanning, as is that of the other species. The rosy wood, which resembles that of *Piptadenia macrocarpa*, is tough and straight grained and is used by the carpenters of Jujuy for various kinds of work. It is indigenous to the northern part of Argentina and is not exported to the south. (Adapted from *Grisebach, Plantae Lorentzianae, p. 121,* and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 48.*)

43459. PIPTADENIA MACROCARPA Benth. Mimosaceæ.

"Used the same as above number." (*Curran.*)

An unarmed tree, native of Brazil, with grayish tomentulose twigs and branches and 10 to 25 pairs of pinnæ, each with 20 to 40 pairs of pinnules, hardly 2 millimeters long. The flowers occur in peduncled heads in the axils of the leaves, sometimes at the ends of the branchlets. The pods are half a foot long and more than an inch wide, with thickened margins. (Adapted from *Hooker's Journal of Botany, vol. 4, p. 341,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2647.*)

43460. SACCELLIUM LANCEOLATUM Humb. and Bonpl. Boraginaceæ.

A tree, 2 to 4 meters in height, with many branches, and a trunk 3 decimeters in thickness. The alternate, lanceolate leaves are 10 to 16 centimeters in height, and the terminal racemes of inconspicuous diœcious flowers resemble minute bouquets. The fruit is a small drupe. The wood of this tree is about the same in color and texture as that of

43451 to 43461—Continued.

the ash (*Fraxinus excelsior*). This tree is found in the Peruvian Andes on the tributaries of the River Guancabamba. (Adapted from *Humboldt and Bonpland, Plantes Equinoxiales, pp. 41–44, pl. 13.*)

43461. Schinopsis lorentzii (Griseb.) Engl. Anacardiaceæ.
(*Quebrachia lorentzii* Griseb.) **Quebracho.**

A tall timber tree, native of central South America, attaining a height of 50 to 75 feet and a diameter of 2 to 4 feet. The leaves are composed of 10 to 15 pairs of pinnæ and the flowers occur in panicles. The fruit is a dry, indehiscent samara. The heartwood of this tree is one of the hardest, heaviest, and most durable timbers in the region of its occurrence. It contains a large amount (20 to 24 per cent) of tannin, which acts as a preservative, and it is used extensively for railroad ties, wharves, dry docks, fence posts, etc. The wood is whiter than that of the *Quebracho colorado* of the Chaco. (Adapted from *Mell, Forest Service Circular 202*, and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 3.*)

43462. Pinus merkusii Jungh. and DeVr. Pinaceæ. **Pine.**

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received October 16, 1916.

This tree, which is the only pine found south of the Equator, attains a height of 100 feet and forms a flat, umbrellalike crown. It is found in Burma, Borneo, Sumatra, and the Philippines, chiefly at elevations of 3,000 to 4,000 feet. The leaves are in clusters of two, the cones are usually in pairs, and the seeds are small, much shorter than the unequal-sided wing. The wood is very resinous, and the trunks are used for masts and spars. (Adapted from *Brandis, Indian Trees, p. 691*, and from *Mueller, Select Extra-Tropical Plants, pp. 393–394.*)

43463 and 43464.

From the Himalaya Mountains. Collected by Mr. R. E. Cooper and presented by Mr. A. K. Bulley, Bees Ltd., Liverpool, England. Received October 16, 1916. Quoted notes by Mr. Cooper.

43463. Chenopodium sp. Chenopodiaceæ.

(Cooper No. 5259.) "This plant grows in sandy soil at an elevation of 10,000 feet and forms a rosette of red-fruited sprays about 11 inches in diameter."

43464. Delphinium sp. Ranunculaceæ. **Larkspur.**

(Cooper No. 5355.) "This plant grows at an altitude of 10,000 feet and was in fruit only under moist gravel banks."

43465. Chorisia insignis H. B. K. Bombacaceæ.

From Guayaquil, Ecuador. Presented by the American consul, through Mr. L. H. Dewey, of the Department of Agriculture. Received November 9, 1916.

"This is one of the silk-cotton trees, although not of such economic importance as the true kapok. The silk cotton is very nice and useful for stuffing pillows. The trunks of the young trees are spiny, but shed the spines with advancing age. I have seen trees of this species in the foothills of Salta with a diameter of 2 meters 40 centimeters, looking like immense onions. Some of the inhabitants there use the partly hollowed trunks of the live trees around their houses for storing their cured meats and other supplies. Here in Tucuman the Chorisia is used quite a good deal for planting along suburban roads and avenues, and while it is not as beautiful a tree as some it is striking and interesting enough. The large flowers are yellowish white, the pods green at first, changing later on to dark brown. The tree resists quite a good deal of frost, about as much as the jacaranda, for instance, but probably can not be grown as far north as Washington. In California and the Gulf States it should do quite well. This species is quite scarce." (*E. F. Schultz.*)

43466 to 43470.

From the Himalaya Mountains. Collected by Mr. R. E. Cooper and presented by Mr. A. K. Bulley, Bees Ltd., Liverpool, England. Received October 16, 1916. Quoted notes by Mr. Cooper.

43466. EREMURUS HIMALAICUS Baker. Liliaceæ.

(Cooper No. 5196.) "This plant, which was found growing in a thin, turfy meadow over sand on river banks in extremely dry situations, is said to occur in only one place, Gonola, Labane, a stage below Kylung. It is 3 or 4 feet high, and the very showy white flowers appear in May."

43467. EREMURUS HIMALAICUS Baker. Liliaceæ.

"Probably the same as No. 5196 [S. P. I. No. 43466]."

43468. IRIS sp. Iridaceæ. **Iris.**

(Cooper No. 5357.) "This dwarf iris grew on sloping turf at an altitude of 10,000 to 12,000 feet. Its leaves are thin and narrow."

43469. SILENE sp. Silenaceæ.

(Cooper No. 5312.) "This plant grew to a height of 2 feet in the moist turf of a cornfield and bore white flowers."

43470. THYMUS sp. Menthaceæ. **Thyme.**

(Cooper No. 5265.) "This plant grows on moist shady slopes at an elevation of 10,000 feet. The flowers are small and yellow, and the fruits are very hairy."

43471. BOUGAINVILLEA sp. Nyctaginaceæ. **Bougainvillea.**

From Georgetown, Demerara, British Guiana. Cuttings presented by the Department of Science and Agriculture. Received October 3, 1916.

An attractive crimson-flowered bougainvillea, originally from Colombia, and now commonly cultivated in several of the British West Indian islands and also in British Guiana. In the latter place the Department of Science and Agriculture has been carrying on experiments with the culture of this ornamental. The crimson bougainvillea has been successfully raised from cuttings and flowers twice a year in British Guiana, once in April or May and once in October or November. (Adapted from note in *Agricultural News, July 1, 1916, vol. 15, p. 220.*)

43472 to 43474.

Collected by Dr. David Griffiths and grown at the Plant Introduction Field Station, Chico, Calif. Plants numbered October 27, 1916.

43472 and 43473. LEPARGYRAEA ARGENTEA (Pursh) Greene. Elaeagnaceæ.] (*Shepherdia argentea* Nutt.) **Buffalo berry.**

"Secured near Pierre, S. Dak. The buffalo berry is a native of the Missouri River valley and westward. In limited localities it has played

43472 to 43474—Continued.

a rather important rôle as a jelly fruit. It grows into a large shrub or small tree, resembling rather closely in leafage the so-called Russian olive belonging to the genus Elaeagnus. The fruit is about the size of a currant and varies in color from yellow to red. It is not at all palatable until very late in the season, after it has partly dried so that the skin is wrinkled and presents a withered appearance. To most tastes it is not palatable at all in the raw state, but it makes a jelly of very superior quality. The fruit is gathered by shaking the trees very late in the season and catching the falling berries upon sheets. The yellow form is usually preferred to the red for culinary purposes." (*Griffiths.*)

43472. Red-berried form. **43473.** Yellow-berried form.

43474. BERBERIS FREMONTII Torr. Berberidaceæ. **Barberry.**

"From Lyford and San Saba, Tex. A native of southern and central Texas. Like the other species of the genus, it has ornamental value. In its native regions the berries are used for culinary purposes. In localities where the species is very abundant jellies are prepared and offered for sale on the markets. The species is very variable." (*Griffiths.*)

43475. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Santiago, Chile. Seeds procured through Mr. W. A. Shelly, at the request of Mr. W. F. Wight, of the Bureau of Plant Industry. Received October 16, 1916.

"*Palta.* I am sending several of the varieties found here in Chile." (*Shelly.*)

43476. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received October 20, 1916, to June, 1917.

"(Nos. 48, 55, 82, 126, and 148. Avocado No. 3.) *Lamat.*[3] A variety combining unusual productiveness with good size, attractive appearance, and good quality of fruit. In addition, it seems to ripen earlier than many other avocados, which suggests it for trial as a winter-ripening variety in California. It has no claim to unusual hardiness, since it is grown at an elevation where frosts are not experienced.

"The parent tree is growing in the chacara of Angel Samayoa, in the town of Amatitlan (altitude 3,872 feet). It stands close to the corner of a small field in which tomatoes and maize are planted annually. The soil is a loose sandy loam, apparently of excellent fertility and considerable depth. The age of the tree is not definitely known, but judging from its size it is probably 5 or 6 years old. It stands about 20 feet high, with an erect crown, extending almost to the ground, about 10 feet broad, and well branched. The trunk is

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[3] This and other varietal names for Mr. Popenoe's Gautemalan avocados have been taken from the Maya language, which in various dialectic forms is the one spoken in those parts of Guatemala from which these avocados have come. It has been thought that the use of these names, many of which have appropriate meanings, would serve to distinguish these varieties from others grown in the United States, as well as to indicate their origin.

6 inches thick at the base. The tree shows every indication of being a strong, vigorous grower, and its branches are stout and shapely and not so brittle as in many weak-growing varieties. The bud wood furnished by the tree is quite satisfactory; the growths are of suitable length, and the eyes are strong and well developed, showing no tendency to drop at an early date, as they do in some varieties.

"During the period in which this tree was under observation it showed a peculiarity in flowering which was not noticed elsewhere in Guatemala. In November, 1916, flowers were produced and a few fruits set. Since a heavy crop was produced in 1916, it was thought that the fruits set from the November bloom were all that would be developed during 1917, but in January the tree flowered again and set a very heavy crop of fruit.

"The crop produced in 1916 amounted to over 100 fruits, which can be regarded a heavy crop when the size of the fruits and the small size of the tree are considered. The crop for 1917 promises to be considerably larger. In 1916 the fruits were practically all picked in November, at which time they were considered by the owner to be mature.

"The fruit is broadly oval, quite uniform in shape, with a smooth green surface when ripe. The weight varies from 14 to 20 ounces. The skin is about as thick as in the average variety of the Guatemalan race, which is one-sixteenth of an inch or slightly more. The flesh is free from fiber, clear, of good texture, and pleasant flavor. Specimens sampled in November, 1916, were not as rich as would be desired, but it may reasonably be assumed that they would have been much better if they had been left on the tree two or three months longer. Perfectly ripened specimens of this variety have not been tested; hence, the quality of this fruit when at its best must remain somewhat in doubt until it comes into bearing in the United States. The seed is comparatively small and always tight in its cavity.

"Form uniformly oval; size above medium to large, weight 14 to 18 ounces, at the time up to 20 ounces, length 4½ inches, greatest breadth 3½ inches; base rounded, with the stem inserted obliquely without depression; stem stout, about 6 inches long; apex rounded, with the stigmatic point to one side and slightly elevated; surface nearly smooth, slightly undulating and somewhat obscurely ribbed, deep green in color, almost glossy, with a few scattering large yellowish green dots; skin thick, slightly over one-sixteenth of an inch at base, nearly one-eighth of an inch at apex, coarsely granular, brittle; flesh cream color, pale green near the skin, of fairly rich flavor, and free from fiber or discoloration; quality very good; seed rather small in comparison to the size of the fruit, almost spherical, about 2½ ounces in weight, with both seed coats adhering closely to the nearly smooth cotyledons, tight in the seed cavity." (*Popenoe.*)

For an illustration of this avocado, see Plate VI.

43477. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**

(*Sechium edule* Swartz.)

From Santo Domingo, Dominican Republic. Received through Mr. Carl M. J. von Zielinski, American vice consul in charge, October 19, 1916.

"Information from reliable sources states that the cultivation of this plant is very simple. It should be planted in a humid soil, preferably where there is plenty of shade. Its growth is said to be wonderful, and after 90 days it has been known to produce over 100 fruits. There are two kinds of *tallote* found in this country, but the difference is said to be only in the color of the skin, which may be either white or green. The fruit is very much liked by the natives and is prepared in many ways. It is used in soup and meat dishes and also in the manufacture of candy. Native physicians prescribe it not only as food for children and old people, but the leaves after boiling are used externally to cure rheumatism. Animals are very fond of the fruit as well as the leaves." (*Von Zielinski.*)

43478. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bel.**
(*Aegle marmelos* Correa.)

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Agricultural Experiment Station. Received October 23, 1916.

This plant is the *bael tree* of India, ascending to 4,000 feet above the sea, and found here and there both wild and cultivated throughout India and also Burma. It finally attains a height of 40 feet. The leaves are trifoliolate and deciduous, and the greenish yellow, nearly globular fruit varies from 2 to 6 inches in diameter, being smaller in the wild trees. The hard shell is filled with a pale orange aromatic pulp, in which occur 10 to 15 long, narrow cells containing the seeds embedded in transparent gum. The Hindus are very fond of this fruit, which in its green state is a specific for dysentery. It is now being tested in several places in the United States with a view to introduction. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, pp. 222, 223*, and from *Mueller, Select Extra-Tropical Plants, p. 20.*)

43479. MANGIFERA VERTICILLATA C. B. Robinson. Anacardiaceæ. **Baûno.**

From Manila, Philippine Islands. Presented by the Bureau of Agriculture. Received October 24, 1916.

A very large tree, with gray bark and extremely poisonous juice. Missionaries in the Province of Moro, Philippine Islands, where this plant is native, say that if one seeks shelter from rain beneath this immense tree the water dripping from the leaves will cause him to have blisters and boils, and if the juice comes in contact with an open cut death results. The leaves are in whorls of four, and the nearly oval fruits are about 6 inches long and 4 inches in diameter, with white flesh containing a seed about 4 inches long. For detailed description of the fruit, see S. P. I. No. 34431. (Adapted from *Robinson, Philippine Journal of Science, sec. C, Botany, vol. 6, pp. 337–339.*)

43480. PERSEA AZORICA Seubert. Lauraceæ.

From St. Michaels, Azores. Presented by Mr. William Bardel, American consul. Received October 24, 1916.

"Seeds collected near Lagoa, at an altitude of 500 feet, and at Furnas, on a mountain rising about 1,800 feet above the level of the sea." (*Bardel.*)

A medium-sized tree, found in the forests of all the islands of the Azores, especially in the island of Pico, at altitudes ranging from 1,000 to 2,500 feet. The younger leaves are hairy margined, and all the leaves are generally oval with wedge-shaped bases. The fruits are quite small and egg shaped. (Adapted from *Seubert, Flora Azorica, p. 29, pl. 6.*)

43481. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Peradeniya, Ceylon. Presented by Mr. C. Drieberg, secretary, Ceylon Agricultural Society. Received October 30, 1916.

"A moderate-sized conical tree, with large leathery leaves, indigenous to Malaya. Its globular purplish brown fruit, about the size of an apple, is famed as one of the most delicious fruits of the Tropics, some writers describing it as 'perhaps the most luscious fruit in the world, partaking of the flavor of the strawberry and the grape.' The delicate white juicy pulp surrounding and adhering to the seed is the part eaten. In striking contrast to it is the dense, thick, reddish rind, containing tannic acid and a dye. The tree is of very slow growth and does not usually come into bearing till about 9 or 10 years old. The essential conditions for it are a hot climate and deep, rich, well-drained soil. Propagation is usually by seed, but may also be effected by gootee or layering. Sow seeds in pots under cover. The plants are of very slow growth, taking about two years to become large enough for planting out, being then only about 12 inches high." (*Macmillan, Handbook of Tropical Gardening and Planting, pp. 164 and 165.*)

See S. P. I. No. 43446 for further description.

43482. SIMABA CEDRON Planch. Simaroubaceæ. **Cedron.**

From Cristobal, Canal Zone. Presented by Mr. O. W. Barrett. Received October 18, 1916.

"Mr. Sandberg believes that these nuts are high in tannic-acid content and also possess some good medicinal qualities, since they are used in several native remedies about here. The tree reaches some 15 to 25 feet in height and bears great quantities of these brownish fruits, consisting of the large seed and a layer, 5 to 15 mm. thick, of reddish yellow flesh, bitter and acrid." (*Barrett.*)

A short, erect, graceful tree with a trunk about 6 inches in diameter and large, alternate, pinnate leaves, composed of 20 or more pairs of leaflets. The white flowers occur in long racemes, similar to those of *Simaba trichilioides.* The oval fruits, which are 6 cm. (2½ inches) long, are edible. A bitter principle is found throughout the plant, but only the seeds are used medicinally. These seeds are inodorous but intensely bitter and are used as a remedy for snake bite, hydrophobia, and in treating fevers and dysentery. If more than 25 or 30 grains are given in a single dose, death may result. This tree is found in Colombia, Panama, and Costa Rica. (Adapted from *Héraud, Nouveau Dictionnaire des Plantes Médicinales, pp. 563–565,* and from *Hooker's Journal of Botany, vol. 5, p. 566.*)

43483 and 43484.

From Villahermosa, Tabasco, Mexico. Presented by Mr. G. Itié, director, Agricultural Experiment Station. Received October 24, 1916. Quoted notes by Mr. Itié unless otherwise stated.

43483. ACROCOMIA MEXICANA Karw. Phœnicaceæ. **Cocoyol palm.**

"*Coyol de sabana* or *cocoyol.* The inhabitants use the fruit in making a dessert, cooking it with brown sugar. Rings are made from the shells."

A prickly palm, about 20 feet high, with a brown woolly trunk up to 1½ feet thick and terminal leaves from 6 to 8 feet in length. The sheathing bases of the leaves are armed with long black spines, and the spathe is very spiny. The yellow flowers are very odorous, and the round fruits are about an inch in diameter. This palm is found in the cooler regions of Mexico up to 3,000 feet above the sea and is said to be hardy at Santa Barbara, Calif. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 19,* from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 211,* and from *Martius, Historia Naturalis Palmarum, p. 285.*)

43483 and 43484—Continued.

43484. Attalea sp. Phœnicaceæ. **Corozo palm.**

"*Corozo.* Very abundant, but little exploited because of the difficulty of breaking the shell."

"An undescribed species, closely related to the Cohune, or Corozo palm (*Attalea cohune*), of the Caribbean coast region of Central America: it differs from the Cohune palm in the smaller and more rounded fruits and the thinner and more brittle shell of the seed. The seed contains a single kernel, smaller than that of the Cohune. The kernels contain a high percentage of oil, said to be the equal of coconut oil and suitable for the manufacture of similar products. The palm is said to grow in great abundance in the vicinity of Mazatlan, Sinaloa, Mexico. The kernels are exported in considerable quantities from Mazatlan to the Pacific ports of the United States for oil extraction." (*C. B. Doyle.*)

43485 to 43487.

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 2, 1916. Quoted notes by Mr. Popenoe.

43485. Annona cherimola Mill. Annonaceæ. **Cherimoya.**

"(No. 49. Duenas, Departamento de Sacaterpequez, October 18, 1916.) Bud wood of an unusually choice variety of cherimoya, or *anona* as it is called here, from a garden in the village of Duenas, about 10 kilometers from Antigua. The cherimoya is very common in this region, which lies at an elevation of about 5,200 feet. There is great variation in the shape and character of the fruit, and the trees seem to vary in productiveness. Most of them bear very few fruits. The tree from which this bud wood was taken has a trunk about a foot in diameter, but at a distance of 10 feet from the ground the top has been removed, probably two years ago, and the sprouts which are to form the new top are now about 6 feet long. There are a good number of these sprouts and they are now in bearing, producing more fruit than is usually borne by the ordinary tree of mature size, although the latter would have a crown 10 to 20 feet broad and a vastly greater amount of fruiting wood. Whether the productiveness of this variety is an inherent characteristic or whether it has been induced by topping the tree, I am unable to determine, but on the chance that it may be inherently a heavy bearer I have secured bud wood for propagation and trial in Florida, and more especially in southern California, where cherimoya culture could undoubtedly be developed into a horticultural industry if prolific and otherwise desirable varieties were obtainable. The fruit of this variety is of excellent size and appearance. It varies from 3 to 7 inches in length and from about 6 ounces to nearly 3 pounds in weight. In form it is uniformly conical, blunt at the apex. The surface is nearly smooth, with the carpellary areas indicated by raised lines. The color is light green. The fruit begins to ripen about the first of October, but the season is not at its height until after the end of the year. Many of the fruits are attacked by an insect which burrows in the seeds. Its presence can be detected by small round holes on the surface of the fruit."

43486 and 43487. Persea americana Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

43485 to 43487—Continued.

43486. "(No. 50. From Santa Maria de Jesus, October 20, 1916.) Avocado No. 4. *Itzamna.* From the garden of an Indian, who refused to divulge his name. The garden is in the center of the village, toward the Volcan de Agua from the central plaza. Santa Maria de Jesus is a small village located upon the upper slopes of the Volcan de Agua, at an elevation of 6,700 feet. It is about 10 kilometers from Antigua. As one climbs up the broad slope of the volcano the character of the vegetation changes considerably, and many of the plants common in the gardens at Antigua are not grown here because of the cold. Among the plants which are conspicuous by their absence are the banana, the orange (and other citrus fruits), and the tender ornamental plants, such as the royal palm. In their stead, the gardens of the Indians are filled with peach trees, chayote vines, granadilla vines (*Passiflora ligularis*), and with vegetables such as peas. The hardy Abyssinian banana is a common ornamental plant. Among the plants of the lower elevations which persist are the cherimoya, the avocado, and the matasano (Casimiroa), though I saw only one tree of the latter. *Grevillea robusta* is one of the commonest ornamental trees. It can thus be seen that the vegetation is not at all tropical in character. The commandant assures me that the thermometer goes below the freezing point, but records are lacking. This avocado has been obtained in the hope that it may prove slightly hardier than those from the lower elevations. In the United States it may succeed in regions which are a trifle too cold for the average Guatemalan variety. It should at least be given a test to determine its hardiness. The fruit is not yet fully grown, so it can not be described. The tree is about 25 feet high and is carrying a fair crop. It has good, large wood and seems to be a stronger grower than some I have seen. The fruits are almost round, tending toward broadly obovoid, and obscurely ribbed. The surface is very light green, almost glossy, with numerous large yellowish dots. The skin is slightly over one-sixteenth of an inch thick. The fruit looks like a good avocado. The season of ripening could not be ascertained, but probably it is not earlier than April."

43487. "(No. 15. San Lucas, Departamento de Sacatepequez, October 22, 1916.) Avocado No. 5. *Batab.* From the garden of an Indian, near the center of the village, to the west of the church. This village is situated on the road between the city of Guatemala and Antigua, at an elevation of 6,850 feet. The principal fruit trees in the gardens of the Indians are peaches, cherimoyas, avocados, quinces, manzanillas (*Crataegus stipulosa*), and pomegranates. There are no bananas here, and I saw only two or three orange trees. The tropical fruits do not succeed at this elevation. This variety, like No. 4 [S. P. I. No. 43486], has been selected because of its possible hardiness. Coming from an elevation about 1,750 feet above Antigua, it may prove to be more frost resistant than varieties from the latter place. It should be given a trial in localities in California and Florida which are slightly too cold for the average variety of this race. The tree is about 20 feet high, with a good crown. According to the owner, it bears over 200 fruits in good seasons, but sometimes the crop is partly de-

43485 to 43487—Continued.

stroyed by frost. The last of the fruits of this year's crop are now being picked. The fruit of this tree seems to ripen later than most of the avocados in Antigua, but this may be due to the difference in elevation. The fruit is of good size and quality, oblong oval, weighing up to a pound, deep green in color, with flesh of good flavor and a seed rather large in size, tight in the cavity, form truncate oval, size medium to above medium, weight 10 to 16 ounces, length 3⅜ to 3⅞ inches, greatest breadth 3 to 3⅝ inches; base obliquely flattened, the stem inserted to one side in a shallow cavity; stem very stout, about 4 inches long; apex truncate to rounded, the stigmatic point slightly raised; surface pebbled or slightly rough, dull deep green in color, with a few yellowish dots and numerous rough russet scars; skin one-sixteenth of an inch thick at base, slightly thicker toward apex of fruit, coarsely granular, separating readily, brittle; flesh firm, oily, rich yellow near the seed, changing to pale green near the skin, very slightly discolored around the base of the seed with fiber traces; flavor very rich, nutty; quality very good; seed medium to rather large in size, oblate-conic in form, 1⅝ to 2 inches broad, tight in the cavity, with both seed coats adhering closely."

43488. Dioscorea praehensilis Benth. Dioscoreaceæ. **Yam.**

From Ogbomosho, Nigeria, West Africa. Tubers presented by Dr. George Green. Received October 3, 1916.

"The dry season is from November to March, and during this time there usually comes one good shower of rain, about the end of January or early in February. (This year the rain came on February 3 and amounted to 2.03 inches—quite a good shower.) The native method of raising yams in Nigeria is as follows: The natives prepare the ground in hills or heaps about 3 feet in diameter, 2 feet in height, and 4 feet apart. These hills are made and the yams planted some time in January. The yams are cut into cross sections about 3 inches in thickness, and then these cross sections are cut into two pieces. One piece is planted in each hill, about 4 inches deep, and then covered with the soil; a tuft of grass is placed on top of the hill to protect the planted yam from the heat of the sun, and more soil is put on top of the grass to prevent the wind blowing the grass away. The yam sprouts through the sides of the hill, and the vines are supported by stout sticks placed perpendicularly or horizontally. Where the yams are being grown in a field that was used the year before for the raising of corn, the cornstalks that were left standing are broken and bent horizontally to the ground and the vines run on these stalks. The hills require frequent weedings and cultivation, and yams planted in January should be ready for digging in July. The yams require about 6 months to mature. When the vines die off, the yams are usually ready for digging. If the vines have died off entirely, it does not hurt the yams to leave them in the ground for a week or two. We use them entirely in the place of Irish potatoes; the method of cooking is quite similar to potatoes. Yams may be either boiled, baked, or steamed. The yam is cut into pieces of suitable size for cooking. I can recommend it as an article of food." (*Green.*)

43489. Carica papaya L. Papayaceæ. **Papaya.**

From Allahabad, India. Presented by Prof. P. H. Edwards, Ewing Christian College. Received October 27, 1916.

"*Papita.*"

43490 and 43491. HORDEUM VULGARE COELESTE L. Poaceæ. **Barley.**

From Tokyo, Japan. Presented by Mr. Teizo Ito, Chief of Plant Industry Division, Imperial Ministry of Agriculture and Commerce. Received November 1, 1916.

"Recently grown and forwarded to me from the Imperial Agricultural Experiment Station of this department at Nishigahara, Tokyo." (*Ito.*)

43490. "*Tashiro-Bozu.*" **43491.** "*Mochi-Hadaka.*"

43492 to 43543. Fabaceæ.

From Mandalay, Burma. Presented by the Deputy Director of Agriculture, Northern Circle, through Prof. C. V. Piper. Received October 31, 1916. Quoted notes from the labels received unless otherwise stated.

43492. BOTOR TETRAGONOLOBA (L.) Kuntze. **Goa bean.**
(*Psophocarpus tetragonolobus* DC.)

A climbing legume grown in tropical and subtropical regions for the young tubers, which are eaten raw or cooked, and for the young pods, which are an excellent vegetable.

43493. CACARA EROSA (L.) Kuntze. **Yam bean.**
(*Pachyrhizus angulatus* Rich.)

The large tuberous roots of this leguminous vine are used for food and as a source of starch. For previous introduction, see S. P. I. No. 42452.

43494 to 43496. CAJAN INDICUM Spreng. **Pigeon pea.**

A leguminous shrub, often grown as an annual in the Tropics and Subtropics for its edible pealike seeds.

43494. "Variety 1, race 1." **43496.** "Variety 3."
43495. "Variety 2."

43497 and 43498. CANAVALI GLADIATUM (Jacq.) DC. **Sword bean.**

A rambling leguminous vine, the young pods and seeds of which are said to make a "well-flavored and wholesome" dish. It is also used as a cover crop. For previous introduction, see S. P. I. No. 43380.

43497. "Variety 1, race 1." **43498.** "Variety 1, race 2."

43499. CANAVALI ENSIFORME (L.) DC. **Jack bean.**

A bushy, semierect, leguminous plant used as green feed in Hawaii and as a green-manure cover crop in Porto Rico.

43500 and 43501. CICER ARIETINUM L. **Chick-pea.**

A leguminous annual cultivated like bush beans. The peas are eaten boiled or roasted, like peanuts, often used in soups, or as a substitute for coffee. For previous introduction, see S. P. I. No. 43273.

43500. "Race 1." **43501.** "Race 2."

43502. CROTALARIA JUNCEA L. **Sunn hemp.**

A leguminous plant used in India for its fiber, as a catch crop, and as a cover crop and green manure. For full treatment of this plant, see Watt, Commercial Products of India, pp. 430–437.

43503. CYAMOPSIS TETRAGONOLOBA (L.) Taub. **Cluster bean.**
(*C. psoraloides* DC.)

A robust annual pulse cultivated in many parts of India. The pods are used as a vegetable and served like French beans; the plant is raised as a shade plant for ginger and cucumbers; and it is sown as an

43492 to 43543—Continued.

ordinary dry crop and used extensively as cattle fodder. The cluster bean is specially suitable as a green-manure or green-fodder crop, owing to the amount of nitrogen it contains and its comparative freedom (when young) from fiber. (Adapted from *Watt, Commercial Products of India, p. 449.*)

43504. Dolichos biflorus L. **Horse gram.**

"The interest in this pulse is mainly as an article of cattle food, the green stems and leaves being a valued fodder. The split peas may be reduced to meal, or boiled, or fried and eaten with rice or other articles of diet." (*Watt, Commercial Products of India, pp. 506–507.*)

The work cited above should be referred to for a more complete discussion of the uses of this plant.

43505 to 43517. Dolichos lablab L. **Bonavist bean.**

"It [the bonavist bean] is grown all over India, more or less, as a green vegetable (corresponding very largely with French beans and, as a ripe pulse, with the broad bean) and also as a fodder crop." (*Watt, Commercial Products of India, p. 510.*)

43505. "Variety 1, subvariety (a), race 1, subrace."

43506. "Variety 1, subvariety (a), race 1, subrace."

43507. "Variety 1, subvariety (a), race 2."

43508. "Variety 1, subvariety (a), race 3."

43509. "Variety 1, subvariety (b), race 1, subrace."

43510. "Variety 1, subvariety (b), race 1, subrace."

43511. "Variety 1, subvariety (c), race 1, subrace."

43512. "Variety 2, race 1, subrace."

43513. "Variety 2, race 1, subrace."

43514. "Variety 3, subvariety (a), race 1, subrace."

43515. "Variety 3, subvariety (a), race 2."

43516. "Variety 3, subvariety (b), race 1."

43517. "Variety 3, subvariety (a), race 1, subrace."

43518. Lathyrus sativus L. **Bitter vetch.**

"This vetch is cultivated throughout India as a cold-weather crop and has the reputation for germinating on land too dry for other rabi crops. It is cultivated chiefly as a fodder, but as it is cheap and easily grown it is considerably used as a food by the poorer classes, principally in the form of bread, dil, or porridge." (*Watt, Commercial Products of India, p. 704.*)

43519. Lentilla lens (L.) W. F. Wight. **Lentil.**
(*Lens esculenta* Moench.)

"The seeds are used chiefly for soups and stews. They are about as palatable as split peas and rank amongst the most nutritious of vegetables." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1839.*)

43520. Phaseolus aureus Roxb. **Mung bean.**

"Variety 2, subvariety (a)."

An erect or suberect, rather hairy much-branched plant cultivated throughout the southern half of Asia. The seeds are used almost exclusively for human food, and the straw is fed to cattle.

43492 to 43543—Continued.

43521 to 43523. PHASEOLUS CALCARATUS Roxb. Rice bean.

An annual half-twining plant cultivated in Japan, China, India, etc., for its edible beans and as a forage and cover crop.

43521. "Variety 2, race 1."
43522. "Variety 1, race 1."
43523. "Variety 2, race 2."

43524. PHASEOLUS MUNGO L. Urd.

"Variety 1."

A plant very similar to the mung bean (*Phaseolus aureus*), but of lower growth and more spreading. It is used like the mung bean, the seeds for human food and the straw for fodder. It is also used as a green-manure crop.

43525. PHASEOLUS RADIATUS L.

"Variety 2, subvariety (c)."

A leguminous plant, native to India, of which the mung bean (*Phaseolus aureus*) is thought to be a cultivated derivative.

43526. PHASEOLUS TRILOBATUS (L.) Schreb.
(*P. trilobus* Ait.)

A trailing legume, native of India, the Malay Archipelago, and eastern Africa, allied to the mung and rice beans.

43527. PISUM ARVENSE L. Field pea.

"A."

A angular-seeded pea, often placed as a variety of *Pisum sativum*, grown largely for forage and green manure.

43528. PISUM SATIVUM L. Garden pea.

"B."

A strain that has proved valuable in Burma.

43529 to 43533. SOJA MAX (L.) Piper. Soy bean.
(*Glycine hispida* Maxim.)

An important leguminous plant valuable for food and forage.

43529. "Variety 1, race 1."
43530. "Variety 1, race 2."
43531. "Variety 1, race 3."
43532. "Variety 2."
43533. "Variety 3."

43534. STIZOLOBIUM NIVEUM (Roxb.) Kuntze. Lyon bean.

"Var. *utilis*. Race 1."

A climbing legume closely allied to the Florida velvet bean, but entirely devoid of stinging hairs. It is valued in India for its edible seeds.

43535. STIZOLOBIUM ATERRIMUM Piper and Tracy. Mauritius bean.

"Race 3."

A leguminous forage plant related to the Florida velvet bean.

43536. STIZOLOBIUM VELUTINUM (Hassk.) Piper and Tracy.

"Race 2." Velvet bean.

A species of velvet bean more or less extensively cultivated in Java.

43537. VICIA FABA L. Broad bean.

"Variety 1."

This plant is grown largely for cattle feed in America, but the beans are extensively used for human food in other countries.

43492 to 43543—Continued.

43538 to 43540. VIGNA CYLINDRICA (Stickm.) Skeels. Catjang.

A leguminous plant closely allied to the cowpea, but with erect pods and smaller seeds.

43538. "Variety 1, subvariety (a), race 1."

43539. "Variety 1, subvariety (a), race 2."

43540. "Variety 2, subvariety (a)."

43541. VIGNA SESQUIPEDALIS (L.) Fruwirth. **Yard-Long bean.**
(*Dolichos sesquipedalis* L.)

"Variety 2, subvariety (c)."

"This can be used as a forage plant or the green pods may be cooked as snap beans, since they are more tender and brittle than those of the cowpea or catjang." (*Bailey, Standard Cyclopedia of Horticulture, vol. 6, p. 3469.*)

43542 and 43543. VIGNA SINENSIS (Torner) Savi. **Cowpea.**

An important leguminous forage crop with numerous agricultural varieties.

43542. "Variety 1, subvariety (b), race 1."

43543. "Variety 1, subvariety (b), race 2."

43544 and 43545.

From Manila, Philippine Islands. Presented by Mr. Mack Cretcher, acting director, Bureau of Agriculture. Received October 18, 1916.

43544. ANTIDESMA BUNIUS (L.) Spreng. Euphorbiaceæ.

Bignai. A small, evergreen tree found in India, the Malay Archipelago, and China, with glabrous leaves and flowers in pubescent spikes. The very juicy red fruits turn black when ripe and are about one-third of an inch in diameter. The bark of this tree yields a fiber from which rope is made, and the leaves are used as a remedy against snake bites and in syphilitic affections. The wood, when immersed in water, becomes black and as heavy as iron. All the parts of the plant have a bitter taste. The fruits are subacid in taste and are used in Java for preserving, chiefly by Europeans, and formerly sold for about 2 pence a quart. (Adapted from *Brandis, Indian Trees, pp. 564, 565,* and from *Lindley, Treasury of Botany, vol. 1, pp. 75, 76.*)

43545. UVARIA RUFA (Dunal) Blume. Annonaceæ. **Banauac.**

"*Banauac; Susong calabao.* Fruits of this species are oblong reniform, 3 to 4 centimeters in length, in bunches of 18 to 20, averaging 115 grams in weight; surface bright red, velvety, ferruginous pubescent; skin thin, brittle; flesh scant, whitish, juicy, aromatic, subacid without a trace of sugar; quality rather poor; seeds many. Season, September." (*Wester, Philippine Agricultural Review, vol. 6, p. 321.*)

43546 and 43547. CHAYOTA EDULIS Jacq. Cucurbitaceæ.
(*Sechium edule* Swartz.) **Chayote.**

From Puerto Plata, Dominican Republic. Presented by the American consul. Received October 27, 1916.

"This fruit is known locally as *tayote,* and according to information obtained from farmers there are only two varieties existing in the district; these are known as white and green, probably due to the color of the fruit when ripe.

The fruit is planted in a horizontal position, and the plant generally begins to bear about three months later and continues to do so throughout the whole year. Some plants are known to bear constantly for a period of eight years or more. The plant is a vine, both climbing and recumbent. The fruit is used as a food and sometimes for medicinal purposes." (*Edw. L. Zowe, American vice consul.*)

43548. SCHINOPSIS LORENTZII (Griseb.) Engl. Anacardiaceæ.
(*Quebrachia lorentzii* Griseb.) **Quebracho.**

From Buenos Aires, Argentina. Received through the Bureau of Chemistry, from the Food Research Laboratory, Philadelphia, originally secured from the director of the Botanical Gardens, Buenos Aires, October 28, 1916.

"*Red quebracho.* A tree with very hard wood and compound coriaceous leaves; flowers borne in branching clusters, fruit a samara. The products which are obtained from this tree constitute the principal source of income of the people where it grows. It is one of the Argentine woods which when exposed to the air, buried in part or wholly, or submerged in water, keeps for years in good condition, as is shown by the tests made with posts, beams, ties, etc., laid by the Argentine railways. From this timber are manufactured logs, beams, ties, telegraph poles, lamp-posts, etc., which are exported in large quantities to foreign countries. The charcoal is very compact, and the extract (tannin) is an important product. The sawdust is very much used in tanning." (*Buenos Aires Botanic Garden, letter of October 1, 1916.*)

43549 and 43550. ARALIA spp. Araliaceæ.

From Ottawa, Canada. Roots presented by Mr. J. Adams, Assistant Dominion Botanist, Central Experiment Farm. Received November 6, 1916.

43549. ARALIA NUDICAULIS L. **Wild sarsaparilla.**

A native American species.

43550. ARALIA RACEMOSA L. **American spikenard.**

A native American species.

43551. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bel.**
(*Aegle marmelos* Correa.)

From Seharunpur, India. Presented by the superintendent, Government Botanic Garden. Received October 27, 1916.

See S. P. I. No. 43478 for previous introduction and description.

43552. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Peradeniya, Ceylon. Presented by Mr. T. H. Parsons, curator, Royal Botanic Garden. Received November 7, 1916.

"*Cho-cho.* These are from the type commonly grown in Ceylon." (*Parsons.*)

43553 to 43556.

From Russia. Presented by Mr. W. P. Kotchetkov, Russian Government Agricultural Agency, St. Louis, Mo., through Prof. C. V. Piper. Received November 7, 1916. Quoted notes by Mr. Kotchetkov.

43553. AGROPYRON CRISTATUM (L.) Beauv. Poaceæ. **Wheat-grass.**

"From the Krasnokut Experiment Station, Samara, Russia."

43553 to 43556—Continued.

43554. PANICUM MILIACEUM L. Poaceæ. **Proso.**

"No. 1. Supposed to be a very old local variety. It matured almost two weeks earlier than regular Russian varieties of *proso*. From Tulun Experiment Field, Government of Irkutsk, Siberia."

43555 and 43556. PISUM SATIVUM L. Fabaceæ. **Garden pea.**

43555. "No. 15. A typical representative of old field peas of Irkutsk. From Tulun Experiment Field, Government of Irkutsk, Siberia."

43556. "No. 28. Very early form of field peas. From Tulun Experiment Field, Government of Irkutsk, Siberia."

43557. × CRATAEGUS DIPPELIANA Lange. Malaceæ. **Hawthorn.**

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received November 7, 1916.

This hybrid is a handsome shrub whose origin is unknown. It is spiny and has deep green, coarsely serrate, deeply lobed leaves. The white flowers are up to an inch in diameter and are produced very freely in June. The dull-red fruit is from one-half to five-eighths of an inch in diameter. This hybrid has been thought to be a cross between *Crataegus tanacetifolia* and *C. punctata* and resembles the former, although it has larger leaves and smaller fruits than this former species. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 428,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 888.*)

43558. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ. **Japanese apricot.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received November 6, 1916.

A tree of the dimensions of the common apricot, with sharply serrate leaves up to 4 inches long and pale-rose flowers a little more than an inch wide. The yellowish or greenish fruits are produced singly or in pairs, are scarcely edible, and are about an inch in diameter. This tree is a native of Chosen, and perhaps of China. It is much cultivated in Japan for ornament, and the double-flowered form was introduced into Europe in 1878. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 244,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2824.*)

See also description of fruit under S. P. I. Nos. 9211 to 9216.

The following recipe for pickling the fruits is taken from a letter from Mr. Frank N. Meyer, dated October 20, 1916: Pick fruits when full grown, but before they are quite ripe (they must be still hard); soak in a tub of water for 24 hours; drain off water, add salt, mixing one-third salt and two-thirds fruit in quantity; let them stand for a period of five to seven days. Should the weather be cool, seven days will make them right; should it be warm, five days is enough. Leaves of the red-leaved variety of *Perilla nankinensis* should be mixed among them. After this salting process the fruits are spread out in the sun to dry, and the juice of the salted red Perilla leaves is sprinkled over them by squeezing a handful of them, and the fruits turned over. Every day this process is repeated, and after three to five days they are put up in vessels in moderately weak brine with Perilla leaves mixed among them and in this way the product can be kept almost indefinitely. Mr. Watase was shown fruits said to be 100 years old. Mr. Watase and I, when we were talking about it, both got the water freely flowing in our mouths. "Yes," he said, "our famous deceased General Nogi used to say to his soldiers, on a hot day in the Manchurian campaign when there was no water in sight, 'Boys, how would you like to have now some nice pickled mumes,' and nobody after that complained about thirst."

43559. TACCA PINNATIFIDA Forst. Taccaceæ. **Fiji arrowroot.**

From Donga, Nigeria, British West Africa. Presented by Rev. C. L. Whitman, Sudan United Mission. Received November 11, 1916.

"Has very starchy tubers, said to be somewhat poisonous. Leaves irregularly lobed, resembling a potato leaf. Seed stalk 1 foot to 8 feet high. Seed pods on a whorl of small pedicels 1 to 1½ inches in length. Grows wild in light upland soil near Donga. It is not cultivated here, but in its wild state is much sought after because of its starchiness. I have not learned the process by which it is made edible. It may be useful as a starch producer if it can be grown. Possibly it might be started under glass." (*Whitman.*)

43560. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November, 1916, to June, 1917.

"(Nos. 54, 109, 115, 137. Avocado No. 6.) *Kanola.* This variety possesses several valuable characteristics. It is the earliest one found in the Antigua region, commencing to ripen at the end of October. This makes it of particular interest to avocado growers in California, since early-ripening varieties are much desired in that State. The tree is exceedingly productive, and the fruit, though small, is of desirable round form and attractive glossy purple color. The flesh is yellow, free from fiber, and of rich flavor, while the seed is comparatively small for a fruit of round or oblate form.

'The parent tree is growing in the sitio of Victor Garcia, who keeps a small estanco on the road from Antigua to San Antonio Aguas Calientes, just above the church of San Lorenzo del Cubo. The elevation is approximately 5,600 feet. Beneath the tree, which stands on a rather steep hillside, coffee has recently been planted. The soil is very loose, black sandy loam, doubtless of volcanic origin. Judging from the crops grown in the vicinity, it must be quite fertile. The age of the tree is not definitely known. Victor Garcia says that it was already of large size when he was a lad, so it may be considered at least 40 years of age, most likely 50 or more. It stands about 35 feet in height, with a spreading but rather open crown 35 feet broad. The trunk is a foot and a half thick at the base. The first branches are about 8 feet above the ground. The young growths are stout, shapely, and vigorous. The indications are that the variety will be a strong grower. The bud wood is excellent, having strong, well-developed eyes well placed on the young twigs, which are round, smooth, and clean. There is no tendency for the eyes to drop from the young twigs, as there is in some varieties. The wood is not unusually brittle.

"Varieties growing at this elevation in Guatemala are not subjected to severe frosts, but should be as hardy as the average of the Guatemalan race.

"The flowering season of the parent tree is from the end of October to the first of December. It flowers very profusely and in good seasons sets heavy crops of fruit. The crop which ripened at the end of 1916 was enormous. It was impossible to make an accurate count, but a conservative estimate would place the number of fruits at 1,500 to 2,000. After such a heavy crop it is to be expected that a light crop will follow. Very few fruits are being carried to ripen at the end of 1917. Victor Garcia states that at least a few fruits are always produced; some seasons the crop is small; in others it is very heavy, as it was in 1916. This is commonly the case with Guatemalan avocados.

"As already stated, the fruit commences to ripen at the end of October. Maturity is indicated by the appearance of a purple blush on one side of the fruit. At this stage it is considered ready for picking, but its flavor is much richer if left on the tree some months longer until the entire fruit is deep purple in color. Apparently this variety has an unusually long fruiting season, for a few fruits (which had been overlooked in picking) were found still hanging on the tree at the end of April, 1917.

"As observed during the past harvest, the ripening season appears to be as follows: First fruits maturing at the end of October; most of crop maturing in November and December, but better if left on the tree until January; a few fruits at least remaining on the tree until March and April.

"The fruit is uniformly oblate in form, resembling a grapefruit. In size it is small, weighing from 6 to 10 ounces. Under better cultural conditions, however, the weight will probably go up to 12 ounces. The color when the fruit is fully ripe is deep purple. The surface is pebbled, not distinctly roughened. The skin is of good thickness, hard, and brittle. The flesh is deep yellow in color, free from fiber, but with slight fiber discoloration (not, however, of an objectionable nature), of fine texture, and rich, oily flavor. The quality can be considered excellent. The seed is round, not large for a fruit of round or oblate form. It is generally found that fruits of this shape have seeds considerably larger in proportion to the size of the fruit than is common in the good varieties of pyriform or oval shape. As in nearly all Guatemalan varieties, the seed is quite tight in the cavity.

"Form roundish oblate; size small to below medium, weight 6 to 10 ounces, length 2¾ to 3 inches, greatest breadth 3 to 3¼ inches; base truncate, the stem inserted squarely without depression; stem fairly stout; 4 inches long; apex flattened, sometimes slightly oblique; surface pebbled, deep purple in color, sometimes almost glossy, with numerous small yellowish dots; skin one-sixteenth of an inch thick at basal end of fruit, about one-eighth of an inch thick at apex, separating readily from the flesh, rather finely granular, woody, brittle; flesh deep cream yellow to yellow near the seed, changing to very pale green near the skin, quite free from fiber and with unobjectionable fiber discoloration, firm in texture and of rich, oily flavor; quality excellent; seed small in comparison to size of fruit, oblate, about 1½ ounces in weight, sometimes excentric, tight in the seed cavity, with both seed coats adhering closely." (*Popenoe.*)

For an illustration of the Kanola avocado, see Plate VII.

43561. CHORISIA INSIGNIS H. B. K. Bombacaceæ.

From Tucuman, Argentina. Presented by Mr. E. F. Schultz, Department of Agriculture, through Mr. W. Henry Robertson, American consul general, Buenos Aires. Received November 6, 1916.

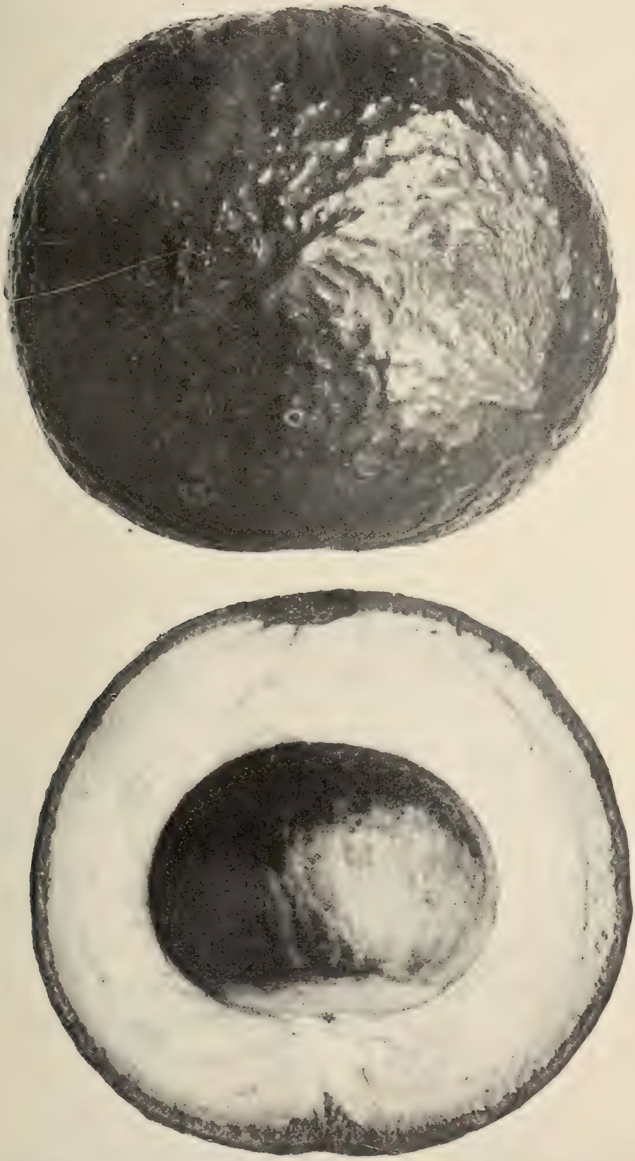
"Known throughout this country as *Palo borracho*, the drunken tree." (*Schultz.*)

See S. P. I. No. 42292 for previous introduction and description.

43562. PYRUS CHINENSIS × COMMUNIS. Malaceæ. **Hybrid pear.**

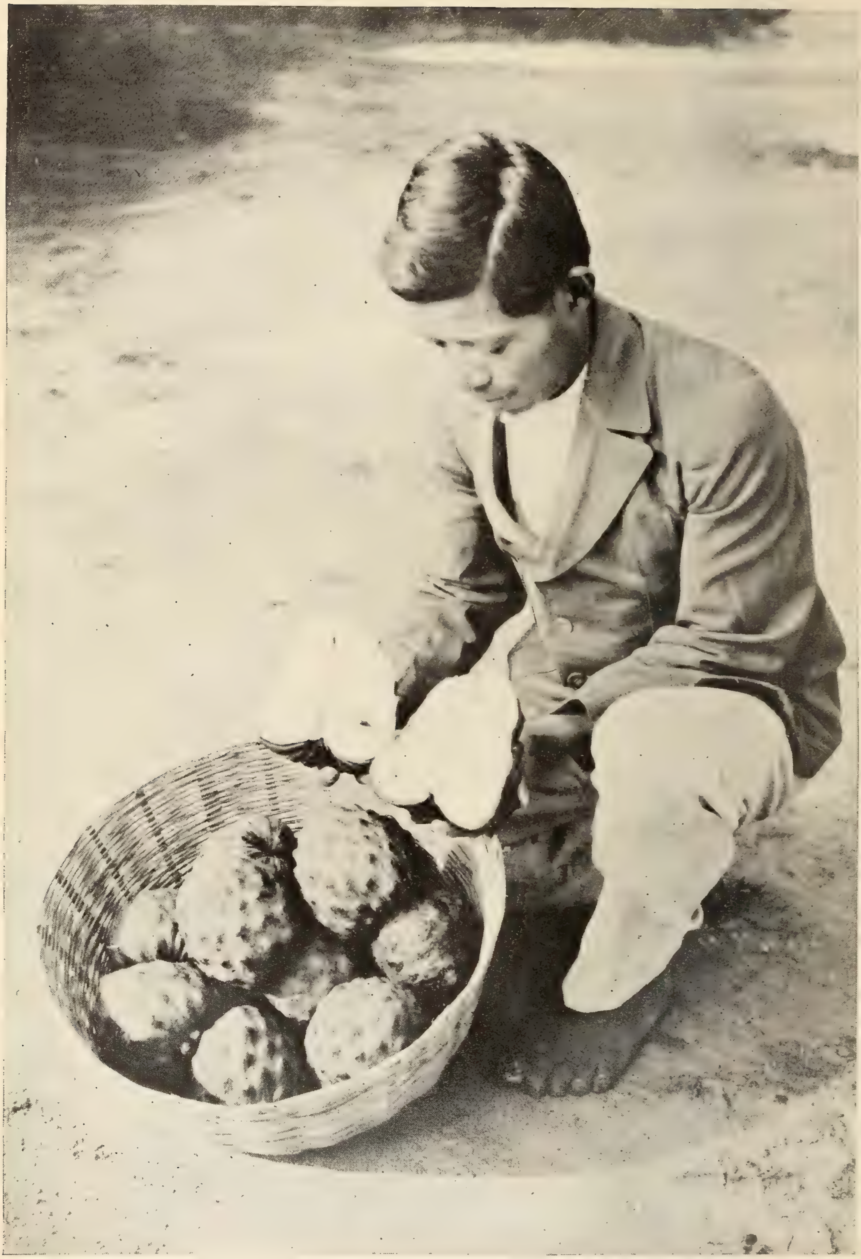
Plants grown at the Plant Introduction Field Station, Chico, Calif. Numbered for convenience in distribution, November 17, 1916.

Hybrid pear, P. I. G. No. 6587, tree 3, row 46. Raised by Dr. W. Van Fleet in 1907 and presented to the Plant Introduction Field Station on December 22, 1909.



THE KANOLA AVOCADO, AN EARLY VARIETY. (PERSEA AMERICANA MILL., S. P. I. No. 43560.)

For southern California early-ripening varieties of the Guatemalan race are particularly desired, in order to have fruit available during the winter months. The variety here shown, from near Antigua, Guatemala, is considerably earlier than the average Guatemalan avocado and is at the same time an attractive fruit of excellent quality. (Photographed by Wilson Popenoe, Jan. 29, 1917, at Antigua, Guatemala; P17068FS.)



A BASKET OF FINE GUATEMALAN CHERIMOYAS. (ANNONA CHERIMOLA MILL., S. P. I. No. 43927.)

The cherimoya is recognized as one of the choicest fruits of the Tropics. It succeeds in southern California and other subtropical regions where the climate is cool and dry. Superior varieties, such as the one here shown, are not excelled in richness of flavor by the pineapple or the strawberry. They are now being introduced into this country by means of bud wood. (Photographed by Wilson Popenoe, Nov. 8, 1917, at the city of Guatemala, Guatemala; P17407FS.)

43563. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Livingston, Guatemala. Presented by Mrs. Lucie Potts. Received November 15, 1916.

"Seeds of the hard-shell 'pear.' This fruit was sent to me from the Vera Paz district and was cut on November 17. The inside was spoiled when I opened it on November 27. It was badly gathered. I think a small piece of stem should be left, since pulling it all off leaves a circular hole at the base of the fruit that permits a quicker decay." (*Mrs. Potts.*)

43564. POA FLABELLATA (Lam.) Hook. f. Poaceæ. **Tussock grass.**

From Stanley, Falkland Islands. Roots presented by Mr. W. A. Harding, manager, Falkland Islands Company, at the request of the American consul, Punta Arenas, Chile. Received November 15, 1916.

A coarse grass, native of the Falkland Islands, growing on peat soils near the sea. The plant forms dense masses of stems, which frequently rise to the height of 4 to 6 feet, and the long, tapering leaves, from 5 to 8 feet long and an inch wide at the base, hang gracefully over in curves. The plant is much relished by cattle, being very nutritious. The inner portion of the stem, a little way above the root, is soft and crisp and flavored like a hazelnut. The inhabitants of the Falkland Islands are very fond of it; they boil the young shoots and eat them like asparagus. (Adapted from *Hogg, Vegetable Kingdom, pp. 823, 824.*)

43565. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From St. Lucia, British West Indies. Presented by the agricultural superintendent at the request of Hon. Francis Watts, Commissioner of Agriculture for the West Indies, Imperial Department of Agriculture, Barbados. Received November 10, 1916.

"White. The green and the white varieties appear to be the only ones known in these islands." (*Watts.*)

43566. FERONIELLA OBLATA Swingle. Rutaceæ. **Krassan.**

From Saigon, Cochin China. Presented by Mr. P. Morange, director, Agricultural and Commercial Services. Received November 13, 1916.

A spiny tree, 25 to 65 feet in height, native of Cambodia and Cochin China, growing rather commonly in forests, both on the plains and on the mountains. The leaflets of the pinnate leaves are oval with rounded or flattened tips, and the very fragrant white flowers appear in many-flowered panicles growing on the branches of the previous year's growth. The fruits are borne in clusters of three or four, are shaped like a flattened sphere, and are from 2 to 2½ inches in diameter. The pulp is edible and is subacid and pinkish. These fruits, which have a pronounced orange flavor when young, are used as a condiment in sauces. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 8, pp. 1219, 1220.*)

43567 to 43577.[4] Amygdalaceæ.

From Valencia, Spain. Procured through Mr. John R. Putnam, American consul. Received November 16, 1916.

Seeds introduced for the work of the Office of Horticultural and Pomological Investigations.

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[4] See footnote, p. 11.

43567 to 43577—Continued.

43567 to 43572. Amygdalus persica L. **Peach.**
(*Prunus persica* Stokes.)

43567. *Melocoton Bandera Española.*

43568. *Tardio Encarnado.*

43569. *Bresquillo Duraznos.*

43570. *Tardio Amarillo.*

43571. *Melocoton Murciano.*

43572. *Melocoton de Sagunto.*

43573. Amygdalus persica nectarina Ait. **Nectarine.**

Abridor de Alginet.

43574 to 43577. Amygdalus persica L. **Peach.**
(*Prunus persica* Stokes.)

43574. *Roquete San Jaime.*

43575. *Pavia de Picasent.*

43576. *Temprano Pequeño.*

43577. *Pavia Fina Encarnada.*

43578. Cyperus esculentus L. Cyperaceæ. **Chufa.**

From Valencia, Spain. Tubers presented by Mr. R. L. Sprague, American consul, Gibraltar, at the request of Mr. George Eustis, Newport, R. I. Received November 16, 1916.

"With regard to the cultivation of chufas, there appears to be little to say. Similarly to peanuts, they require a light sandy soil, well worked, and periodical irrigation. In preparing for planting, the soil is well pulverized and mixed with sea sand and organic manure, supplemented occasionally with superphosphates and a little ammonium sulphate. The surface is leveled and irrigation ditches made at a distance of 2 or 3 palms (17 to 24 inches) apart. The spaces between, or rows, are flattened in spots at intervals of 2 or 3 palms, the seed being placed three or four to each hill on the surface and these hills lightly covered with loose earth. The seed is not buried, and the depth of the covering should not exceed 2 inches. The only attention required is occasional weeding and irrigation, as the tuber requires plenty of moisture." (*Sprague.*)

43579. Cyrtostachys lakka Beccari. Phœnicaceæ. **Palm.**

From Singapore, Straits Settlements. Presented by Mr. I. H. Burkhill, director, Botanical Gardens. Received November 6, 1916.

A stately, elegant palm, producing suckers. The slender spineless stem is covered with a cluster of boldly arched leaves, 3½ to 4½ feet in length. The flowers are monœcious, and the dry fruits are elongate, egg shaped, and small, about 10 mm. (five-twelfths of an inch) long and half as wide. The ovate seeds are about one-sixteenth of an inch long. This species differs from *Cyrtostachys renda* in the more elongated and smaller fruits and in the oval seeds. (Adapted from *Beccari, Annales du Jardin Botanique de Buitenzorg, vol. 2, p. 141*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 947.*)

43580. Tricondylus myricoides (Gaertn. f.) Kuntze. Proteaceæ.
(*Lomatia longifolia* R. Br.)

From Clarence, Blue Mountains, New South Wales. Presented by Mr. Harry B. Shaw, Federal Inspector, port of New York, through Dr. G. R. Lyman, of the Department of Agriculture. Received November 9, 1916.

A shrub 8 to 10 feet high, with very narrow lance-shaped leaves and terminal or axillary racemes of cream-colored flowers. The fruit is an oval-oblong follicle, and the seeds are winged. The wood is light colored and very hard, with a beautiful small figure, well suited for turnery. (Adapted from *Edwards's Botanical Register, pl. 442,* and from *Maiden, Useful Native Plants of Australia, p. 564.*)

43581 to 43583.

From Madagascar. Presented by Mr. Eugene Jaeglé, director, Agricultural Station of Ivoloina, near Tamatave. Received November 8, 1916.

43581. MEDEMIA NOBILIS (Hildebr. and Wendl.) Drude. Phœnicaceæ.
(*Bismarckia nobilis* Hildebr. and Wendl.) **Bismarck's palm.**

A tall fan-shaped palm found in western Madagascar, with a stout columnar trunk. The compact foliage has a spread of 3 meters, and from the white-striped leafstalk hang immense clusters of light-brown fruits about the size of plums. (Adapted from *Wendland, Botanische Zeitung, vol. 39, pp. 94, 95.*)

43582. LAGERSTROEMIA SPECIOSA (Muenchh.) Pers. Lythraceæ.
(*L. flos-reginae* Retz.) **Crape myrtle.**

A tree, 50 to 60 feet in height, with leaves from 4 to 8 inches long and large panicles of flowers which vary from rose to purple from morning to evening. This is the chief timber tree in Assam and eastern Bengal, India, and also in Burma. It occurs along river banks and on low swampy ground and is commonly cultivated as an avenue tree. No special care is used in growing this tree, which is felled when from 30 to 50 years of age, and the timber is used for shipbuilding, boats, etc., being very durable under water. It has been introduced into southern California. (Adapted from *Watt, Commercial Products of India, p. 701,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1775.*)

43583. LINOMA ALBA (Bory) O. F. Cook. Phœnicaceæ. **Palm.**

A slender, spineless, Arecalike palm found in tropical Asia, where it grows to a height of 30 feet or more and a diameter of 8 or 9 inches, dilated at the base. The leaves are 8 to 12 feet long. Branches of the spadix 6 to 18 inches long, erect or slightly reflexed, zigzag when young. By far the best of the genus and when young a very desirable pinnate house and table palm, deserving to be well known. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1004.*)

43584. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Dorcyville, La. Presented by Mr. Leonce M. Soniat, Cedar Grove Plantation. Received November 20, 1916.

"Two of the fruits raised by a gentleman who lives on my place. These are a cross between the green and the white." (*Soniat.*)

43585. DIMOCARPUS LONGAN Lour. Sapindaceæ. **Longan.**
(*Nephelium longana* Cambess.)

From Paget East, Bermuda. Presented by Mr. E. J. Wortley, director, Bermuda Agricultural Station. Received November 20, 1916.

Bud wood from the same tree as seed of S. P. I. No. 43338.

43586. Amygdalus persica L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Nanking, China. Presented by Mr. Paul Jameson, American consul. Received November 22, 1916.

"A complete assortment of seeds of all peaches grown in this district. It is the custom to pick the fruit before it ripens." (*Jameson.*)

Introduced for the work of the Office of Horticultural and Pomological Investigations.

43587 to 43589. Rosa spp. Rosaceæ. **Rose.**

From Kew, England. Cuttings presented by Mr. W. Watson, curator, Royal Botanic Gardens. Received November 20, 1916.

43587. Rosa ferruginea Vill.
(*Rosa rubrifolia* Vill.)

An erect shrub, 5 to 7 feet in height, whose stems are covered with a purplish bloom and are armed with small decurved prickles. The leaves are composed of five to seven beautiful purplish red, smooth leaflets, up to 1½ inches in length. The deep-red flowers are 1½ inches wide and occur a few in a cluster. The nearly globose red fruit is one-half an inch or more long and is smooth. This shrub is found in central Europe, especially in the Alps and Pyrenees and other mountainous regions. Its color makes it a most valuable ornamental in the vegetative condition, and it is very striking when planted in groups. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 440.*)

43588. Rosa moyesii Hemsl. and Wils.

A shrub 6 to 10 feet in height, with erect stems armed with stout, pale, broad-based prickles. The leaves are from 3 to 6 inches long and are composed of 7 to 13 leaflets, which are dark green above and pale glaucous below. The flowers, which occur solitary or in pairs, are a lurid dark red and from 2 to 2½ inches in width. The red bottle-shaped fruits are 1½ inches or more long, with a distinct neck between the body of the fruit and the persistent sepals. This rose is a native of western China and was first found on the frontier of Tibet at an altitude of 9,000 feet and over. It is perfectly hardy in the British Isles and is remarkable for the color of its petals. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 435.*)

43589. Rosa villosa L.
(*Rosa pomifera* Herrmann.)

A bush 4 to 6 feet high, armed with scattered, slender, but broad-based prickles up to one-half an inch long. The leaves, which are from 4 to 7 inches in length, are composed of five to seven leaflets, which are doubly serrate and downy on both surfaces. The deep rosy pink flowers are up to 2½ inches wide and are produced in clusters of from three to six. The rich red fruit is pear shaped or rounded and about 1½ inches long. This rose is a native of central Europe and has a larger fruit than any other hardy rose. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 439.*)

43590. HOLCUS SORGHUM VERTICILLIFLORUS (Steud.) Hitchc. Poaceæ. Sorghum.

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanic Station. Received June 22, 1915. Numbered November 25, 1916.

"Seeds of a wild sorghum collected at Anse aux Pins, Mahe, Seychelles." (*Dupont.*)

Seed separated from S. P. I. No. 40848 and grown during the season of 1916.

43591 and 43592. TRIFOLIUM PRATENSE L. Fabaceæ. Red clover.

From Reading, England. Presented by Messrs. Sutton & Sons. Received November 21, 1916.

43591. "*Sutton's cow-grass,* which invariably gives only one cutting in the year in this country and lasts four to five years." (*Sutton.*)

43592. "*English red clover,* the ordinary stock of red clover." (*Sutton.*)

43593. PASSIFLORA NAPALENSIS Wall. Passifloraceæ. Granadilla.

From Lawang, Java. Presented by Mr. M. Buysman. Received November 18, 1916.

A glabrous climbing plant, found up to 6,000 feet in India, with slender angular branches and distant leaves. The leaves are deep green above and up to 4 inches in length. The small cup-shaped flowers occur in lax few-flowered cymes, and the nearly globular fruit is purplish and about the size of a large pea. (Adapted from *Hooker, Flora of British India, vol. 2, p. 600.*)

43594. DOLICHOS LABLAB L. Fabaceæ. Bonavist bean.

From Georgetown, British Guiana. Presented by Mr. J. F. Waby. Received November 13, 1916.

"Var. *Nankinicus.* Secured through one of the traveling instructors of the Department of Science and Agriculture in the County of Berbice, adjoining the County of Demerara. We use them as a side dish, mixed with rice, and prefer them to all other bonavists for this purpose." (*Waby.*)

43595 to 43597. MELILOTUS spp. Fabaceæ. Sweet clover.

From Erfurt, Germany. Purchased from Messrs. Haage & Schmidt, through Mr. Julius G. Lay, American consul general, Berlin. Received November 14, 1916.

43595. MELILOTUS NEAPOLITANA Ten.
(*M. gracilis* DC.)

An herb with slender roots and a straight, slender, glabrous stem 6 to 9 inches high. The leaflets are slightly serrate, and the racemes are straight and slender with pale-yellow flowers. The pods are straight and almost globular and contain two seeds. This plant has been reported from Frejus and Perpignan, France. (Adapted from *DeCandolle, Flora Francais, vol. 5, p. 565.*)

43596. MELILOTUS SEGETALIS (Brot.) Seringe.

An herb, sometimes erect and sometimes lying along the ground, with ovate leaflets somewhat serrate near the bases. The flowers occur in lax

43595 to 43597—Continued.

racemes, and the glabrous pods are nearly round and contain but a single seed. This plant is found in Mediterranean countries from Spain to Palestine and in northern Africa. It differs from *Melilotus sulcata* in having fruits two or three times as large. (Adapted in part from *DeCandolle, Prodromus Systematis Naturalis, vol. 2, p. 187.*)

43597. MELILOTUS SULCATA Desf.

An annual herb with erect stems and lax, elongated racemes of small yellow flowers. The rather small pods are almost round and are keeled. This plant has been found growing in clay in various places in Asia Minor. (Adapted from *Boissier, Flora Orientalis, vol. 2, p. 106, 1872.*)

43598. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ.
Yerba maté.

From Concepcion, Paraguay. Presented by Mr. Thomas R. Gwynn. Received November 21, 1916.

A small evergreen tree, native of Paraguay and Brazil, whose leaves are roasted and ground to make the Paraguay tea of commerce. This plant might be grown in Texas and California. (Adapted from *Friderici, Tropenpflanzer, 1907, pp. 776–783.*)

See S. P. I. No. 43456 for further description.

43599. NOTHOPANAX ARBOREUS (Forst.) Seem. Araliaceæ.
(*Panax arboreum* Forst.)

From Avondale, Auckland, New Zealand. Presented by Mr. H. R. Wright, Avondale Nursery. Received November 22, 1916.

"Seeds of a very pretty evergreen shrub grown for its foliage. Height 15 feet." (*Wright.*)

43600. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Zamboanga, Philippine Islands. Presented by Mr. J. A. Tiffany, Philippine Constabulary. Received November 22, 1916.

"The present crop of mangosteens in Jolo is the poorest for several years. I found only two or three seeds in each fruit I selected and these were not so good as has been usual in former crops. The next crop should yield some excellent fruits." (*Tiffany.*)

43601. CANARIUM OVATUM Engl. Balsameaceæ. **Pili nut.**

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture. Received November 21, 1916.

A tree, native of the Philippines, with compound leaves and triangular drupes containing one seed. These nuts are eaten throughout the eastern part of the world, and from them is extracted an oil which is used for table purposes and also for burning in lamps. (Adapted from notes of *H. H. Boyle, assistant horticulturist, Bureau of Agriculture, Manila.*)

See also S. P. I. No. 38372 for further data.

43602. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November, 1916, to June, 1917.

"(Nos. 71, 127, 149. Avocado No. 7.) *Ishkal.* Several people have recommended this variety as a fruit of unusually fine quality. Ripe fruits of the variety have not been seen by me.

"The parent tree is growing in the patio of the Masonic Building, 7a Avenida Norte No. 4, Guatemala. The elevation here is 4,900 feet. Apparently the tree is quite old, at least 50 years, as it is 60 feet high, with the trunk more than 2 feet thick at the base. The crown is dense and seems to be in vigorous condition. The bud wood is excellent, having well-developed eyes which are not inclined to drop and leave a blind bud. Everything seems to indicate that the variety is oval to broadly obovoid in form. The caretaker states that it is formed, vigorous, and not unusually brittle.

"Avocados growing at this elevation in Guatemala are not subjected to severe frosts, but should be as hardy as the average of the Guatemalan race.

"The tree did not produce any fruit in 1916, but it flowered heavily early in 1917 and set a large crop of fruit, which promises to remain on the tree to maturity. According to the caretaker who lives on the property, the season of ripening is from March to July. The fruit is not at its best until May. If this is actually the case, the variety can probably be considered rather late in season of ripening.

"Judging from the young fruits on the tree at this time (July 20, 1916), the variety is oval to broadly obovoid in form. The caretaker states that it is about a pound in weight when mature and dull purple in color when ripe. The surface is strongly pebbled, the skin moderately thick, woody, and brittle. I am inclined to suspect that the seed may be undesirably large, but this can not be definitely ascertained at the present time. Don Pedro Brunj and others tell me that the flesh is of rich yellow color, unusually buttery in consistency, and very rich in flavor.

"This variety should not be propagated extensively until it has fruited in the United States, since it is included in this collection solely on the recommendation of Guatemalans who are familiar with it." (*Popenoe.*)

43603 to 43606. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Tegucigalpa, Honduras. Presented by Mr. Clarence W. Martin. Received November 24, 1916. Quoted notes by Mr. Martin.

43603. "*Colorados.* Red aguacates, largest and hardiest variety of Honduras. Stands all degrees of climate in Honduras, cold and hot. Grown at 72° F., mean temperature. Pear shaped."

43604. "*Moreño.* A mottled green and brown skin. The fruit is almost perfectly round and not pear shaped. From 3,000 feet altitude. Mean temperature here 72° F."

43605. "*Negros.* Black aguacates. From a cool altitude of 3,500 feet. This is a round aguacate. Grown at 72° F., mean temperature."

43606. "*Verdes.* A small green aguacate. Most sought after of all, on account of its better flavor. Pear shaped, long necked. Grown at 72° F."

43607 to 43632.

From Mandalay, India. Presented by Mr. A. W. Sawyer, assistant botanist. Received November 20, 1916. Quoted notes by Mr. Sawyer.

43607 to 43628. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

43607 to 43632—Continued.

43607 to 43612. "Burmese dry-zone sorghums, from the Meiktila District."

43607. "No. 1A. *Pyaung-pyu-galè.* Used as fodder."

43608. "No. 2A. *Pyaung-ni-galè.* Used as fodder."

43609. "No. 3A. *Pyaung-shwè-wa.* Used as fodder."

43610. "No. 4A. *Sán-pyaung.* Used as grain and eaten by man and cattle."

43611. "No. 5A. *Kôn-pyaung,* white. Used as grain and fodder."

43612. "No. 6A. *Pyaung-net.* Used as fodder."

43613 to 43628. "Indian varieties of sorghum."

43613. "No. 1B. *Saloo.* From Central Provinces; used as grain."

43614. "No. 2B. *Collier.* From Central Provinces; used as fodder."

43615. "No. 3B. *Dukuri.* From Poona (Dekkan); used as grain."

43616. "No. 4B. *Hundi.* From Poona (Dekkan); used as grain."

43617. "No. 5B. *Nilwa.* From Poona (Dekkan); used as fodder."

43618. "No. 6B. *Peria Manjal Cholam.* From Madras."

43619. "No. 7B. *Palpu Jonna.* From Madras; used as fodder."

43620. "No. 8B. *Giddu Jonna.* From Kurnool (Madras); used as grain."

43621. "No. 9B. *Cherukupatsa Jonna.* From Kurnool (Madras); used as grain."

43622. "No. 10B. *Tella Jonna.* From Bellary (Madras); used as grain."

43623. "No. 11B. *Patcha Jonna.* From Bellary (Madras); used as grain."

43624. "No. 12B. *Pedda Jonna.* From Nandyal (Madras); used as fodder."

43625. "No. 13B. *Sweet Juar.* From Lyallpur (Punjab)."

43626. "No. 14B. *Andhri.* From Cawnpore (United Provinces); used for grain and fodder."

43627. "No. 15B. *Bawni.* From Cawnpore (United Provinces); used as grain."

43628. "No. 16B. *Dodania.* From Cawnpore (United Provinces); used as grain and fodder."

43629. ELEUSINE CORACANA (L.) Gaertn. Poaceæ. **Ragi millet.**

"No. 10. *Sât-ni.* From Koilpatti (Madras); used for grain and fodder."

43630. CHAETOCHLOA ITALICA (L.) Scribn. Poaceæ. **Millet.**
(*Setaria italica* Beauv.)

"No. 2C. *Sât.* From Meiktila District, Burmese dry zone; used for grain and fodder."

43607 to 43632—Continued.

43631. PANICUM MILIACEUM L. Poaceæ. **Proso.**

"No. 3C. *Lū.* From Meiktila District, Burmese dry zone; used for grain and fodder."

43632. PANICUM MILIACEUM L. Poaceæ. **Proso.**

"No. 4C. *Lū.* From Monywa, Burmese dry zone; used as grain and fodder."

43633. JUNIPERUS PACHYPHLOEA Torr. Pinaceæ. Juniper.

From New Mexico. Collected by Dr. David Griffiths, of the Bureau of Plant Industry. Received November 23, 1916.

"Collected in the Organ Mountains, October 9, 1916." (*Griffiths.*)

A large tree, often 50 to 60 feet high, with a short trunk 3 to 5 feet in diameter and smooth, reddish brown bark. The leaves are bluish green, and the flowers appear in February and March. The large, reddish brown fruits contain a thick, dry, mealy flesh and are gathered and eaten by the Indians. The wood is light and soft and not strong. This tree is found on dry, arid mountain slopes at elevations of 4,000 to 6,000 feet in the southwestern part of the United States and northwestern Mexico. (Adapted from *Sargent, Manual of the Trees of North America, pp. 90, 91.*)

43634 and 43635. JASMINUM spp. Oleaceæ. Jasmine.

From Kew, England. Cuttings presented by Sir David Prain, director, Royal Botanic Gardens. Received November 22, 1916.

43634. JASMINUM REVOLUTUM Sims.

A nearly evergreen shrub of a lax, spreading habit, being the stoutest of the cultivated jasmines. The dull, very dark green leaves are composed of from three to seven leaflets, and the fragrant, yellow flowers are produced in terminal corymbs of 6, 12, or more together. This shrub is a native of Afghanistan and the northwestern Himalayas. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, pp. 661, 662*).

43635. JASMINUM WALLICHIANUM Lindl.

A nearly evergreen shrub, with slender, angled, smooth branchlets and alternate leaves composed of from 7 to 13 leaflets up to 1½ inches in length. The yellow flowers are about five-eighths of an inch long and are produced either singly or in clusters of three. This shrub is a native of Nepal, India, and has been cultivated in England since 1812. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 626.*)

43636. SOLANUM MELONGENA L. Solanaceæ. Eggplant.

From Westfield, N. J. Presented by Dr. R. S. Keelor. Received November 27, 1916.

"The Japanese eggplant of the long-fruited variety, grown from seed in my own garden at Westfield, N. J., from seed imported from Japan. This variety of eggplant is very fruitful and possesses fine keeping qualities. In fact, I still have some of them on hand and find them very good eating, although they were picked from the garden five weeks ago, after having been exposed to four or five rather severe frosts and a temperature as low as 36° F." (*Keelor.*)

43637. LEUCAENA GLAUCA (L.) Benth. Mimosaceæ.

From Miami, Fla. Presented by Mr. S. H. Richmond. Received November 28, 1916.

"A shrub which grows 10 feet high. The plants sprang up, grew 6 feet, and fruited after we supposed every root had been eradicated." (*Richmond.*)

43638. XANTHOSOMA sp. Araceæ. **Yautia.**

From Rama, Nicaragua. Presented by Mr. Carlos Berger. Received November 28, 1916.

"Tubers of the supposed *Palma yautia.* This plant has the peculiarity of drying up during the dry season, like *Dorstenia contrayerva* and several other plants, all of which dry up here in January, when it still rains, and stay so during the whole so-called dry season, even though it be really dry only a month or so, and despite the fact that the mounds seldom dry out, except in an unusually dry season, about once in ten years. This induces me to believe that these plants have emigrated from the interior of Nicaragua, where there is a well-defined dry season and where they may have acquired the habit of drying up at a certain season of the year." (*Berger.*)

43639 to 43641. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

From Canton, China. Presented by the American consul general, through the Department of Commerce. Received November 27, 1916.

"Four varieties of beans are grown in the Canton consular district: The black, the red, the yellow, and the so-called white. These beans are cultivated along the banks of the Tsochiang and the Yuchiang, in Kwangsi. The best varieties are said to come from near Siangshui and Lungchow in the southwestern part of the Province. The actual acreage under cultivation can not be estimated, on account of the fact that the beans are not cultivated in any one district but in many places and in small patches of from 1 to 3 mou. (The mou varies in different parts of China; in Canton 4.847 mou equal 1 acre.)" (From *Consular Report, November 7, 1916, p. 504.*)

43639. "*White bean.* The white bean is called by the Chinese *chutou* or *pearl-shaped* bean. It is grown principally in the Province of Kwangsi, although certain quantities are produced in Kwangtung, Yunnan, and Kweichow Provinces, which are within this consular jurisdiction." (*Consular Report, November 7, 1916, p. 504.*)

43640. "Black beans."

43641. "Yellow beans."

43642 to 43671.

From Cairo, Egypt. Seeds presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received November 10, 1916.

43642. ACACIA SCORPIOIDES (L.) W. F. Wight. Mimosaceæ. Babul.
(*A. arabica* Willd.)

A shrub or small tree, with gray branchlets, and leaves composed of 10 to 20 pairs of leaflets. The flowers are in groups of two to five, and the flat, gray-downy pods are from 3 to 6 inches long. This plant is found extensively in India; also in Arabia and Europe. The gum (Indian gum arabic) which exudes from the tree is of great commercial value and is used for a variety of purposes. The gum is usually obtained without tapping. The pure pale gum comes only from healthy trees and under

43642 to 43671—Continued.

favorable circumstances; long exposure to dampness or rain darkens the gum, and gnarled or diseased stems produce only the inferior darker gum. This gum is used in calico printing and in all other industries where a mucilage is necessary. The bark of this tree as well as the pods is extensively used in India as a tanning material, and the wood is much valued on account of its hardness and durability. It may be raised from seeds. (Adapted from *Watt, Commercial Products of India, pp. 2–8,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, pp. 188–189.*)

43643. CAESALPINIA PECTINATA Cav. Cæsalpiniaceæ. **Tara.**
(*C. tinctoria* Domb.)

An erect shrub or small tree, native of Peru, where it grows at altitudes from 8,000 to 10,000 feet. In the vicinity of Lima, Peru, the pods are used as a tanning material.

See also S. P. I. No. 41323.

43644. CAESALPINIA SEPIARIA Roxb. Cæsalpiniaceæ.

A tree found ascending to 4,000 feet in the Himalayas, distributed throughout tropical Asia, and also introduced into tropical America. It is covered with numerous small pale-brown prickles and has rather narrow glabrous leaves about a foot long. The bright-yellow flowers occur in simple, lax racemes from 1 to 2 feet long, and the pods are less than 2 inches long, are hard, and clothed with very small deciduous bristles. (Adapted from *Hooker, Flora of British India, vol. 2, p. 256.*)

43645. CAILLIEA NUTANS (Pers.) Skeels. Mimosaceæ.
(*Dichrostachys nutans* Benth.)

A spiny much-contorted shrub or small tree, native of central Africa. The Acacialike leaves are composed of 5 to 10 pairs of pinnæ, each with 10 to 20 pairs of leaflets. The flowers occur in dense axillary spikes, the upper ones sulphur yellow and the lower ones rosy lilac. The pod is twisted and is about a third of an inch wide. This shrub has been introduced into southern California. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1003.*)

43646. CAJAN INDICUM Spreng. Fabaceæ. **Pigeon pea.**

A shrub 3 to 10 feet high, cultivated in the Tropics for the nutritious peas. The flowers are yellow and maroon, and the pods are hairy and pealike. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 613.*)

See S. P. I. No. 41646 for previous introduction.

43647. CALLISTEMON SPECIOSUS (Sims) DC. Myrtaceæ. **Bottle-brush.**
(*Metrosideros speciosus* Sims.)

A large shrub, native of New South Wales, Australia, but cultivated in the British Isles and in the United States. The leaves are lance shaped, with prominent midribs, and the bright red flowers occur in terminal spikes from 2 to 6 inches long. The golden yellow of the anthers contrasting with the dark red filaments makes this a beautiful ornamental. It may be grown anywhere, except in places subject to frosts. (Adapted from *Curtis's Botanical Magazine, pl. 1761,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 630.*)

43642 to 43671—Continued.

43648. Cassia corymbosa Lam. Cæsalpiniaceæ.

A very handsome shrub, native of Argentina, but introduced and cultivated in the British Isles and the middle portion of the United States. It attains a height of 4 to 10 feet, and the leaves are composed of three pairs of leaflets. In the spring the branches are clothed with numerous corymbs of bright-yellow flowers. This is one of the best-known garden species, being an excellent conservatory plant for spring, summer, and autumn bloom. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 680,* and from *Florists' Exchange, July 27, 1912.*)

43649. Cassia didymobotrya Fres. Cæsalpiniaceæ.

A woody plant, native of Abyssinia, with leaves composed of five to seven pairs of leaflets. The flowers occur in racemes growing from the upper axils, the petals being painted by the thick, colored nerves and veins. The slender pods are compressed. (Adapted from *Fresenius, Flora, vol. 22, p. 53, 1839.*)

43650. Cassia eremophila A. Cunn. Cæsalpiniaceæ.
(*C. nemophila* A. Cunn.)

A woody plant, found in all the colonies of Australia except Tasmania. The leaves are composed of two pairs of very narrow leaflets, and the pods are very smooth. In Australia both the pods and the leaves of this plant are eaten by stock. (Adapted from *Maiden, Useful Native Plants of Australia, p. 47.*)

43651. Citharexylum quadrangulare Jacq. Verbenaceæ.

A large tree, native of the West Indies, with permanently 4-angled branches and opposite, entire, serrate leaves. The small white odorous flowers occur in racemes, and the fruit is a fleshy drupe. This tree might prove to be a good ornamental for the northern part of the United States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 778.*)

43652. Clerodendrum indicum (L.) Druce. Verbenaceæ.
(*C. siphonanthus* R. Br.)

A shrub, 2 to 8 feet high, rather openly branched, with opposite or verticillate narrow notched leaves. The white flowers, which occur in very large terminal racemes, have tubes 3 to 4 inches long. The fruit is a showy red and purple berry, which persists a long time. This shrub is a native of the East Indies and is also hardy in Florida. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 801.*)

43653. Arecastrum romanzoffianum (Cham.) Becc. Phœnicaceæ.
(*Cocos romanzoffiana* Cham.) Palm.

This coconut palm is found in Santa Catharina, Brazil, and bears a fibrous fruit, which is eaten, although containing insipid juice. But one seed is contained in this fruit, which is said to be about the size of a walnut. The spadix is about 6 feet in length. (Adapted from *Choris, Voyage Pittoresque Autour du Monde, p. 5.*)

43654. Cordia myxa L. Boraginaceæ. Sebesten.

A moderate-sized deciduous tree, found in tropical Asia and Australia, with oval leaves and thick, rough bark. The wood is soft and is said to have furnished the lumber from which the mummy cases were made. In India it is used for boat building, gunstocks, and agricultural imple-

43642 to 43671—Continued.

ments; it is an excellent fuel. The bark is made into ropes and the fiber is used for calking boats. The fruits are succulent and mucilaginous and when young are eaten as vegetables or pickled. They have also been employed as pectoral medicines. (Adapted from *Maiden, Useful Native Plants of Australia, pp. 19, 165, 407, 620, 639,* and from *Gamble, Manual of Indian Timbers, p. 270.*)

43655. GENISTA RAETAM Forsk. Fabaceæ. **Retem.**
(*Retama raetam* Webb.)

A simple-leaved shrub, from 1 to 3 meters in height, found everywhere on the sand dunes in various places in Egypt; also in Tunis, Algeria, etc. It is densely branched, and the leaves are about 5 mm. long. The sessile white flowers, one to five in a cluster, are about a centimeter long; the pods are inflated and abruptly beaked. The bitter roots are made into a decoction which is used by the Arabs as a heart stimulant. The plant, after maceration in water, is applied to wounds as a curative. (Adapted from *Forskål, Flora Aegyptico-Arabica, p. 214,* and from *Muschler, Manual Flora of Egypt, vol. 1, p. 473.*)

43656. GMELINA ARBOREA Roxb. Verbenaceæ. **Gumhár.**

A large tree, occurring over a large part of India, but nowhere plentiful, being found up to 5,000 feet altitude in moist places. It reaches a height of over 100 feet and a diameter of about 5 feet and is found in deciduous forests in moist, fertile valleys. It has smooth gray bark and loses its leaves in hot weather. While the leaves are off, the flowers appear, followed a little later by the new leaves. The wood is yellowish or white, not very hard, but light and strong, with a handsome luster. As it is easily worked and takes varnish well, it is used for dugout canoes, furniture, carriages, toys, dolls, etc. In Madras the juice of the root is used in cases of dysentery. The tree is often planted in avenues and can readily be raised from seeds. (Adapted from *Rodger, Forest Bulletin (India) No. 16, 1913.*)

43657. JATROPHA CURCAS L. Euphorbiaceæ.

A large shrub or tree, up to 15 feet in height, found throughout tropical America and Africa. It has long-petioled leaves, somewhat three to five lobed, like the English ivy. The flowers are small and yellowish green, occurring in many-flowered cymes. From the seeds there is obtained by hot pressing an oil of great commercial value. Medicinally it is similar in its action to croton oil, but is a milder laxative. Large quantities are imported into Europe for soap manufacture and for lighting purposes. It is said to be especially used in the manufacture of a transparent soap for dressing woolen cloths. As a drying oil it is also very valuable. The chief supply of this oil (*Oleum infernale*) now comes from the Cape Verde Islands, where the Portuguese Government is making large plantations of *purgueira*, as it is known. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1720,* and from the *Bulletin of the Bureau of Agricultural Intelligence, p. 278, April, 1911.*)

43658. KALANCHOE MARMORATA Baker. Crassulaceæ.
(*K. grandiflora* A. Rich.)

A very stout low-branching shrub, native to the mountains of Abyssinia. The oval succulent leaves are pale green, blotched with purple; the young leaves are orange-green with blood-red spots; all of the leaves are crenate.

43642 to 43671—Continued.

The creamy white flowers, each more than 2 inches long, are in large compound panicles. (Adapted from *Gardeners' Chronicle, vol. 12, Sept. 10, 1892,* and from *Curtis's Botanical Magazine, pl. 7333.*)

43659. MICROCOS LATERIFLORA L. Tiliaceæ.
(*Grewia asiatica* L.)

A small tree, native of tropical Africa and India, with roundish serrate leaves from 2 to 7 inches long. The flowers are yellow, and the fruit is a round, hairy drupe about the size of a pea. The leaves and the fruits are said to be used in the treatment of dyspepsia and diarrhea. (Adapted from *Hooker, Flora of British India, vol. 1, p. 386,* and from *Dragendorff, Heilpflanzen, p. 419.*)

43660. MONTANOA HIBISCIFOLIA (Benth.) C. Koch. Asteraceæ.

One of the tree daisies of Central America, which is easily distinguished by its five to seven lobed, opposite, entire leaves. It is easily cultivated, the seeds being started indoors and the plants transferred to the open for foliage effects. It may also be propagated by cuttings. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2064,* and from *Koch, Wochenschrift des Vereines zur Beförderung des Gartenbaues, vol. 7, p. 407.*)

43661. PAVONIA SPINIFEX (L.) Cav. Malvaceæ.

A weak-growing shrub, sometimes attaining the height of 20 feet, but with a slender stem and few upright branches. The alternate leaves are oval heart shaped, crenate, and hairy on both sides. The large yellow flowers are odorless. This shrub is a native of South America and is of horticultural value for its flowers. (Adapted from *Botanical Register, pl. 339,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2489.*)

43662. PONGAM PINNATA (L.) W. F. Wight. Fabaceæ.
(*Pongamia glabra* Vent.)

A tall, erect tree or climber with glabrous branches and leaves, the latter composed of five to seven opposite leaflets. The flowers occur in simple axillary racemes, and the woody, glabrous pods are up to 1½ inches long. This species is a native of tropical Asia and Australia and was first introduced into the United States in 1910. The yellow, tough, close-grained wood is prettily marked and might be used for chair making. In India an oil is extracted from the seeds, which is used as an illuminant and as an application in skin diseases. A poultice made of the leaves is used as a remedy for ulcers. The ash of the wood is a dyeing material. Owing to its handsome foliage, this tree is used as an ornamental in the Southern States. (Adapted from *Maiden, Useful Native Plants of Australia, pp. 200, 591,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2753.*)

43663. SAPINDUS VITIENSIS A. Gray. Sapindaceæ.

A tree about 30 feet in height, with warty bark on the branchlets and with leaves composed of three to four pairs of shiny green leaflets about 4 inches long. The numerous flowers occur in large terminal panicles, but are small and white and apparently not of ornamental value. Found in the Fiji Islands on leeward coasts. (Adapted from *Gray, U. S. Exploring Expedition, Botany, vol. 1, pp. 251, 252.*)

43642 to 43671—Continued.

43664. Schinus terebinthifolius Raddi. Anacardiaceæ.

A small evergreen tree, native of Brazil, with alternate leaves composed of two to seven pairs of oblong, sessile leaflets with serrate margins. The flowers occur in terminal panicles and are followed by globose vermilion fruits. All parts of this tree, and especially the bark, are more or less resinous; the native fishermen smear this resin on their nets to protect them from the water. The leaves are used as an application to wounds and sores. In Minas Geraes the young twigs are used as toothbrushes, cleaning the teeth and hardening the gums. (Adapted from *Rodrigues, Hortus Fluminensis, p. 102.*)

43665. Solanum macranthum Dunal. Solanaceæ.

An ornamental tree, native of Brazil, attaining a height of 12 to 14 feet and probably more. The ample, alternate leaves, with acutely lobed margins, have prickly veins. These prickles become large and stout on the lower surface, especially on the midrib. The flowers, which occur in axillary racemes, are large and pale lilac in color, with darker dashes and pale lines. This tree has long been cultivated at the Royal Botanic Gardens, Kew. It is readily propagated from cuttings. (Adapted from *Curtis's Botanical Magazine, pl. 4138.*)

43666. Spartium junceum L. Fabaceæ. **Spanish broom.**

A tall shrub of rather gaunt habit, native of southern Europe, with erect, cylindrical, rushlike stems, smooth and dark green, which take the place of leaves. The leaves are very few and deciduous, and the fragrant flowers, which occur in terminal racemes up to 18 inches in length, are of a rich glowing yellow. The pods are from 1½ to 3 inches long and contain from 5 to 12 seeds. This shrub is grown for its showy flowers, which appear from June to September, and also for the fiber, which is obtained from the branchlets by maceration. This fiber is worked up into thread, cordage, etc. The plant must be raised from seeds and kept in pots until ready to be set out. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 522, 523.*)

43667. Sphaeralcea umbellata (Cav.) Don. Malvaceæ.
(*Malva umbellata* Cav.)

A woody plant, native of Mexico, attaining a height of a foot and a half, covered with dense hairs. The heart-shaped leaves are somewhat seven lobed and dark green, and its numerous scarlet flowers occur in clusters of three, or rarely of four or five. (Adapted from *Edwards's Botanical Register, vol. 19, p. 1608.*)

43668. Terminalia arjuna (Roxb.) Wight and Arn. Combretaceæ.

A very large tree with smooth green or whitish bark found on the banks of rivers and streams throughout central and southern India. The leaves are narrowly oblong and up to 9 inches in length. The flowers, which appear in April and May, occur in terminal panicles, and the fruit is a 5-winged drupe about 2 inches long. This tree yields a clear, transparent gum, which is used as a drug in northern India; the bark is used as a dye and for tanning, and the wood, which is apt to split in seasoning, is used for carts and agricultural implements. The ash from this wood contains a very high percentage of lime. (Adapted from *Watt, Commercial Products of India, p. 107*, and from *Beddome, Flora Sylvatica of India, vol. 1, pl. 28.*)

43642 to 43671—Continued.

43669. THRYALLIS BRASILIENSIS L. Malpighiaceæ.
(*Galphimia brasiliensis* Juss.)

A shrub, native of Brazil, with reddish, oval, lance-shaped leaves about 1 inch long and small yellow flowers in short, lax panicles. This ornamental plant has been introduced into California, where its bright flowers make it very attractive. In Brazil it is called *Resedá amarello* and *Tintureira.* The flowering season is from September to December. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1312,* and from *Rodrigues, Hortus Fluminensis, p. 62.*)

43670. TOONA CILIATA Roemer. Meliaceæ. **Toon tree.**
(*Cedrela toona* Roxb.)

A large deciduous tree, found chiefly near streams in tropical sub-Himalayan regions. The wood obtained from this important timber tree is not eaten by white ants and is very durable.

See S. P. I. No. 43288 for further description.

43671. WIGANDIA CARACASANA H. B. K. Hydrophyllaceæ.

A shrubby tropical plant with a green hairy stem and alternate rusty hairy leaves 5 to 6 inches long. The large, pale-violet flowers are borne in loose terminal panicles and make the plant a very showy ornamental. It does not do very well indoors in greenhouses, but should be planted outside in frostless regions. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 6, p. 1975,* and from *Curtis's Botanical Magazine, pl. 4575.*)

43672. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ.
(*P. juliflora* DC.) **Algaroba.**

From Honolulu, Hawaii. Presented by Mr. J. M. Westgate, agronomist, Hawaii Agricultural Experiment Station. Received November 20, 1916.

A leguminous tree with small flowers in little heads or spikes. The pod is more or less thickened, and the leaves are composed of a large number of leaflets. This tree is a native of Mexico and the West Indies. (Adapted from *note of W. Harris, Kingston, Jamaica, April 7, 1916.*)

See also S. P. I. No. 42643 for further data.

The algaroba has become a very important forage tree in the Hawaiian Islands, where its dissemination has been fostered. The pods are used for fattening pigs.

43673 and 43674. Undetermined. Myrtaceæ.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received November 20, 1916.

43673. From tree No. 2. **43674.** From tree No. 3.

For previous introduction and description, see S. P. I. No. 43441.

43675 to 43701.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum and selected by Mr. H. C. Skeels and Dr. W. Van Fleet, of the Bureau of Plant Industry. Received November 20, 1916.

43675. ACANTHOPANAX SESSILIFLORUM (Rupr. and Maxim.) Seem. Araliaceæ.

An ornamental hardy shrub, found in eastern Siberia. The leaves are palmate, the brownish flowers occur in dense umbels on the spiny

43675 to 43701—Continued.

branches, and the fruits are blackish berries. (Adapted from *note of Frank N. Meyer, dated Nov. 24, 1906.*)

See also S. P. I. No. 19476 for further data.

43676. ACER ARGUTUM Maxim. Aceraceæ. **Maple.**

A small deciduous tree, with erect branches and doubly serrate leaves from 2 to 4 inches in length. The greenish yellow flowers are produced in April before the leaves, and the keys are borne in hanging racemes. This tree is a native of the mountain woods of Japan and makes an elegant appearance with its pale-green leaves in summer and its purplish brown branches in winter. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 135.*)

43677. BUDDLEIA DAVIDII SUPERBA (DeCorte) Rehd. and Wils. Loganiaceæ.

A large shrub, from 8 to 10 feet high, with rather thick, slightly wrinkled leaves, and pale rose-colored flowers in dense panicles which appear from the axils of the uppermost leaves. This shrub is found in central and western China. (Adapted from *E. H. Wilson, Horticulture, Sept. 20, 1913,* and from *Journal of Horticulture, July 10, 1913.*)

43678. BUDDLEIA DAVIDII VEITCHIANA Rehder. Loganiaceæ.

A large shrub, having an erect habit and with 4-angled shoots. The flowers are bright mauve with orange-yellow throats, and they occur in rather dense panicles. This variety has a more erect habit and dense flower clusters than the typical species. (Adapted from *E. H. Wilson, Horticulture, Sept. 20, 1913.*)

43679. CAMPYLOTROPIS MACROCARPA (Bunge) Rehder. Fabaceæ. (*Lespedeza macrocarpa* Bunge.)

A shrub, up to 6 feet in height, with long-stalked leaves and oval leaflets. The purple flowers appear in many-flowered racemes about 3 inches long, and the glabrous pods are more than half an inch long. This shrub is found in northern and central China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1845.*)

43680. COTONEASTER DIELSIANA E. Pritz. Malaceæ.

A deciduous shrub, about 8 feet high, with ovate leaves and flowers occurring three to seven in a cluster. The round or pear-shaped fruit is scarlet. This shrub is a native of central China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 408.*)

See also S. P. I. No. 40575 for further information.

43681. COTONEASTER HORIZONTALIS Decaisne. Malaceæ.

A low, flat, deciduous shrub, native of China, with branches spreading horizontally and branchlets covered with thick, brown wool. The dark, glossy green leaves are generally oval and up to one-half inch in length. The flowers are white, suffused with pink, are about one-fourth of an inch in diameter, and appear singly or in pairs in May. The globose fruit is bright red, about one-fifth of an inch in diameter. This is one of the handsomest of the cotoneasters and is easily propagated by cuttings. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 411.*)

43675 to 43701—Continued.

43682. COTONEASTER HORIZONTALIS PERPUSILLA C. Schneid. Malaceæ.

A low Chinese shrub, with the branches almost horizontal and roundish oval leaves, less than one-third of an inch long. The flowers are erect and pink, and the bright-red, ovoid fruit has usually three stones. This variety differs from the typical species in having smaller leaves and fruits. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 865.*)

43683. DEUTZIA DISCOLOR Hemsl. Hydrangeaceæ.

A shrub 5 or 6 feet in height, native of central and western China. The narrowly oval leaves are dull green and up to 4½ inches in length. The flowers, which vary in color from white to pink, occur in corymbs and are from half an inch to an inch in width. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 481.*)

43684. EUONYMUS BUNGEANUS SEMIPERSISTENS (Rehder) C. Schneid. Celastraceæ.

A large glabrous shrub or small tree, from 3 to 5 meters high, with bright-green leaves of a bluish or grayish hue, half evergreen. The yellowish white flowers appear in loose three to seven flowered cymes, and the few fruits are bright pink. This variety differs from the species in having leaves which remain on the plant until midwinter. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1188,* and from *Sargent, Trees and Shrubs, vol. 1, p. 165.*)

43685. EUONYMUS EUROPAEUS LEUCOCARPUS DC. Celastraceæ.

A deciduous shrub or small tree, from 10 to 25 feet in height, forming a spreading, bushy head. The leaves are narrowly oval, and the white flowers occur in cymes about 1½ inches long. The red fruit is from one-half to three-fourths of an inch wide. This shrub is a native of Europe, including the British Isles, and is very striking in autumn when well laden with fruit. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 539.*)

43686. EUONYMUS RADICANS CARRIEREI (Vauv.) Nicholson. Celastraceæ.

A low, spreading shrub with no inclination to climb, with glossy leaves from 1 to 2 inches long. The greenish flowers occur in clusters of five or more at the end of a slender stalk, and the fruit, which is orange shaped and greenish white or tinged with red, is one-third of an inch in diameter. This may be only a stunted form of the typical species. It is a native of Japan and is cultivated in the New England States. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 542.*)

43687. EUONYMUS RADICANS VEGETUS Rehder. Celastraceæ.

A low, spreading shrub up to 5 feet in height, climbing high if placed against a wall. The dull-green, thickish leaves are broadly oval and obtuse, and the greenish white flowers occur in rather dense cymes. The fruit is a greenish white capsule, inclosing a bright-orange aril. Both flowers and fruits appear in great profusion, and it can be recommended as a broad-leaved evergreen for cold regions. (Adapted from *Sargent, Trees and Shrubs, vol. 1, p. 130 and pl. 65.*)

43675 to 43701—Continued.

43688. Euonymus yedoensis Koehne. Celastraceæ.

A deciduous shrub or small tree, growing 10 feet or more high, with pinkish purple fruit. This shrub is a native of Japan, and in autumn its leaves turn a brilliant red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 543.*)

43689. Hydrangea rosthornii Diels. Hydrangeaceæ.

A shrub up to 12 feet in height, with roundish oval, slender-pointed leaves from 4 to 9 inches in length. The white or purplish sterile flowers occur in cymes 4 to 7 inches wide. This shrub is a native of western China, and the flowers appear in July. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1622.*)

43690. Hydrangea xanthoneura Diels. Hydrangeaceæ.

A deciduous shrub about 8 feet in height, of a loose, straggling habit. The leaves, dark green above and pale beneath, are in threes and of an oval shape. The creamy white sterile flowers are in flattish panicles of a width of about 6 inches, and the perfect flowers are dull white and one-fourth of an inch wide. This shrub is a native of central China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 631.*)

43691. Hydrangea xanthoneura setchuenensis Rehder. Hydrangeaceæ.

A shrub up to 15 feet in height, with the last year's branchlets light brown. The narrow, elliptic, bright-green leaves are up to 8 inches long and 4 inches wide, and the white, fertile flowers are in rather loose corymbs from 5 to 10 inches wide, appearing in July. This shrub is a native of western China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1620.*)

43692. Hypericum patulum henryi Bean. Hypericaceæ.
St.-John's-wort.

A hardy evergreen shrub, native of northern India and the Himalayas, with very large dark-green leaves and large handsome yellow flowers. (Adapted from *Curtis's Botanical Magazine, pl. 4949.*)

See also S. P. I. No. 38153 for further information.

43693. Lespedeza formosa (Vogel) Koehne. Fabaceæ.
(*L. sieboldii* Miquel.)

An herb, or in warm regions a shrub, up to 2 meters high, throwing up strong, wiry shoots each year from the crown. The stems are hairy, angled, reddish or brown, and the rosy purple flowers, nearly half an inch long, occur in very numerous long, drooping racemes. The pod is about half an inch long and pubescent. This plant, which is a native of Japan and China, is a very desirable late bloomer. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1845.*)

43694. Ligustrum acutissimum Koehne. Oleaceæ. **Privet.**

A much-branched shrub, with the branches often extending almost horizontally. The leaves are narrowly oval, with slender pointed tips. The white flowers occur in dense panicles from three-fifths of an inch to 1⅗ inches long. This shrub has been found in Hupeh, China. (Adapted from *Urban und Graebner, Festschrift zur Feier Herrn Ascherson, p. 198, 1904.*)

43675 to 43701—Continued.

43695. LIGUSTRUM OBTUSIFOLIUM REGELIANUM (Koehne) Rehder. Oleaceæ. **Privet.**

A dwarfed shrub of dense habit, with the branches spreading horizontally. The oblong or narrowly oval leaves are downy beneath, and the white flowers, produced in July, are in terminal, nodding clusters. The glabrous fruit, at first covered with a purplish bloom, is finally black and is smaller than that of the typical species. This shrub is a native of Japan. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 24, 25.*)

43696. LONICERA FERDINANDI Franch. Caprifoliaceæ. **Honeysuckle.**

A very robust deciduous shrub of spreading, open habit, attaining a height of 8 or 9 feet. The oval dull-green leaves are from 1½ to 4 inches long and are hairy on both sides. The yellow flowers are produced in pairs during June, and the fruit is red. This shrub is a native of Mongolia and China, and it flowers very freely. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 43.*)

43697. LONICERA HENRYI Hemsl. Caprifoliaceæ. **Honeysuckle.**

An evergreen climbing plant, with oblong leaves and purplish red flowers, produced in clusters of 2 or 3 inches across. The fruit is blackish purple. The plant is a native of China and Tibet. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 45.*)

See also S. P. I. No. 40585 for further information.

43698. LONICERA MAACKII ERUBESCENS Rehder. Caprifoliaceæ. **Honeysuckle.**

A rather low, spreading shrub, with broadly oval leaves which are dark green above and paler beneath. The flowers are large and tinted with pink, and the fruit is dark red. This variety is found in central China. A very desirable late bloomer. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1910.*)

43699. LONICERA MAACKII PODOCARPA Franch. Caprifoliaceæ. **Honeysuckle.**

A low, spreading shrub with broadly oval, short-tipped, dark-green leaves. The flowers are white, fading to yellowish, and the fruit is dark red. This shrub, which is a native of central China, is most beautiful in the fall, for the dark-green foliage and the fruits last until November. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1910.*)

43700. MALUS ARNOLDIANA Rehder. Malaceæ. **Crab apple.**

This is a hybrid of *Malus floribunda* with one of the hybrids of *M. baccata*, and appeared spontaneously in the Arnold Arboretum several years ago. It makes a smaller tree than *M. floribunda*, but its long, spreading and arching branches are very graceful and the flowers produced on long stems are more than twice as large as those of *M. floribunda*. These flowers are a beautiful pink, and it is considered by some persons to be the most beautiful of the crab apples. (Adapted from the *Arnold Arboretum Bulletin of Popular Information, Nos. 3, 1911, and 39, 1913.*)

43675 to 43701—Continued.

43701. Malus baccata cerasifera (Spach) Takeda. Malaceæ.
(*Pyrus cerasifera* Tausch.) **Crab apple.**

This crab apple, very probably a hybrid, makes a large tree with a spreading head. The flowers are large and pure white, and the fruit is variable in size, shape, and color. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5. 2872.*)

43702. Guilielma utilis Oerst. Phœnicaceæ. **Palm.**
(*Bactris utilis* Benth. and Hook.)

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received December 7, 1916.

"The most valuable palm, besides *Cocos nucifera* and the date. One of the heaviest bearers per acre of all the fruit trees, the fruit ripening during the greater part of the year. The fruit is orange color, is eaten boiled, generally in salt and water; and is very good. Mixed with sugar many kinds of sweet cakes can be made from it; it is more mealy than the farinaceous tuber roots. This palm grows fairly well on the coast up to 1,100 feet; prefers a damp climate, mountain slopes, and deep soil with plenty of humus. These seeds were taken from well-ripened fruits and dried for two hours in the sun under cover of sackcloth." (*Wercklé.*)

43703 to 43736.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum and selected by Mr. H. C. Skeels and Dr. W. Van Fleet, of the Bureau of Plant Industry. Received November 20, 1916.

43703. Malus prunifolia rinki (Koidz.) Rehder. Malaceæ. **Apple.**
(*Pyrus prunifolia rinki* Bailey.)

A wide-spreading small tree, up to 18 feet high, with pink or pinkish flowers and oval, serrate leaves. This tree yields an edible fruit, sometimes reaching a diameter of 1½ inches, of a greenish or yellowish color and with a bitter-sweet flavor. It was formerly cultivated in Japan for its fruit, but is now chiefly used as a stock for the imported varieties. It is a native of China, where it is sparingly cultivated. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2873.*)

43704. Malus sieboldii arborescens Rehder. Malaceæ. **Apple.**
(*Pyrus sieboldii arborescens* Bailey.)

A shrub or tree, up to 30 feet high, with slightly pubescent oval-oblong leaves which become red in autumn. The flowers are often nearly white, and the red or yellow fruits are about the size of peas. The typical species has pink flowers and is always a shrub. This tree is a native of Japan and is cultivated both for ornament and as a stock for breeding purposes. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2874.*)

43705. Malus zumi (Mats.) Rehder. Malaceæ. **Apple.**
(*Pyrus zumi* Mats.)

A small tree of pyramidal habit, with oval or oblong leaves from 1½ to 3½ inches long. The flowers are pink in the bud, becoming white after opening, are 1 to 1¼ inches in diameter, and are produced in clusters of four to seven. The globose, red fruits are half an inch in diameter. This

43703 to 43736—Continued.

tree is a native of Japan and was introduced into North America in 1892. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 300.*)

43706. Rosa abietina Grenier. Rosaceæ. **Rose.**

A compact shrub, 5 to 7 feet in height, with straight, slender, very prickly branches, leaves five, seven, or sometimes nine parted, leaflets from half an inch to 1¾ inches long, three-eighths of an inch to 1 inch wide, and rather small rose-colored flowers in one to eight flowered clusters. Known only from Dauphiny and Switzerland. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 567.*)

43707. Rosa amblyotis Meyer. Rosaceæ. **Rose.**

A stout-branched rose, with dark-purple bark covered with prickles and bristles. The leaves are usually composed of seven leaflets. The flowers are pink and solitary, and the fruits are about half an inch long. This rose has been found in Kamchatka, Siberia. (Adapted from *Meyer, Mémoires L'Académie Impériale des Sciences de St. Petersbourg, vol. 6, Botanique, pp. 30, 31, 1849.*)

43708. Rosa baicalensis Turcz. Rosaceæ. **Rose.**
(*R. acicularis* Lindl.)

A low-growing rose with densely prickly stems and leaves composed of three to seven leaflets up to 2 inches in length. The solitary deep-rose flowers are from 1½ to 2 inches wide and fragrant. The fruit is pear shaped. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2993.*)

43709. Rosa canina L. Rosaceæ. **Dog rose.**

A robust shrub from 6 to 13 feet high, with stems armed with scattered hooked bristles and leaves composed of five to seven leaflets, sometimes downy. The fragrant white or pinkish flowers occur in clusters, and the egg-shaped or roundish fruits are bright red. This rose, in one or another of its numerous varieties, is found throughout most of the cooler parts of Europe and western Asia and has been naturalized in North America. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 422.*)

43710. Rosa caudata Baker. Rosaceæ. **Rose.**

This rose is a tall, vigorous shrub, native of western China. It has stout, arching stems, dark-green foliage, and flowers about 2 inches in diameter. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 42.*)

See also S. P. I. No. 42976 for further information.

43711. Rosa chinensis manetti Dipp. Rosaceæ. **Manetti rose.**

An upright, vigorously growing rose, with slender branches usually armed with more or less hooked prickles and leaves composed of three to five dark-green shining leaflets. The deep pink flowers are single or semidouble and the fruit is more or less top shaped. This variety has been recommended as a stock for forcing roses, but is not entirely hardy. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2988.*)

43712. Rosa cinnamomea L. Rosaceæ. **Rose.**
(*R. pendulina* L.)

A strong-growing bush, 6 to 9 feet high, stems erect, much branched near the top, with usually a pair of hooked prickles at the base of the

43703 to 43736—Continued.

leafstalks and numerous others scattered on the stems, especially near the ground. Leaflets usually five or seven, oblong or slightly obovate, 1 to 1½ inches long. Flowers produced either singly or few in a cluster, of varying shades of red, 2 inches across. Fruit globose, or slightly elongated, red, half an inch wide. A native of Europe, Siberia, and northern China; cultivated in England for more than 300 years, but not, as was once believed, a native. The flowers have a somewhat spicy odor, from which the species derives its name. It is regarded as the type of a large group of roses whose leading distinctions are prickles, often in pairs just below the leafstalks, and red, smooth fruit, with a thin skin. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 423.*)

43713. ROSA CORIIFOLIA Fries. Rosaceæ. **Rose.**

A low shrub, up to 5 feet high and thickly branched, with a bluish bloom often appearing on the bark and many hooked spines. The leaves are composed of five to seven roundish oval, hairy leaflets, and the flowers are pink. This rose is found in mountainous parts of Europe and western Asia. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 566.*)

43714. ROSA FEROX Bieb. Rosaceæ. **Rose.**

A dwarf, compact little bush, from 1 to 2 feet high, of a rounded form, with numerous decurved prickles. The leaves are composed of five to seven leaflets, coarsely but evenly serrate, and the white flowers, which are either solitary or in clusters of two or three, are from 1 to 1¼ inches long. The roundish fruit is red. This rose is a native of the Crimea and Caucasus. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 426.*)

43715. ROSA GAYIANA Wall. Rosaceæ. **Rose.**

A European rose closely allied to *Rosa villosa* L., from which it appears to differ chiefly by its larger, oblong-ovate leaflets. The thorns are straight and the flowers solitary. (Adapted from *Wallroth, Rosae Plantarum Generis Historia Succincta, p. 171, 1828.*)

43716. × ROSA HIBERNICA J. E. Smith. Rosaceæ. **Rose.**

Var. *grovesii.*

A low shrub with glaucous green foliage and small pink flowers. This rose is a hybrid between *Rosa spinosissima* and *Rosa canina.* (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2995.*)

43717. ROSA JUNDZILLI Besser. Rosaceæ. **Rose.**

A bush from 3 to 9 feet in height, the stems armed with scattered, slightly curved prickles. The leaves are composed of five to seven leaflets, densely serrate, and the pink flowers, which are produced singly or in threes, are 3 inches wide. The globose or slightly egg-shaped fruit is bright red. This rose is a native of central Europe and is remarkable for the abundance of sticky glands on the midribs and petioles of the leaves. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 431.*)

43718. ROSA LHERITIERANEA Thory. Rosaceæ. **Rose.**

This rose, supposed to be a hybrid between *Rosa pendulina* and *Rosa chinensis*, climbs to a height of 12 feet, and has slender, sparingly prickly branches. The leaves are composed of three to seven leaflets,

43703 to 43736—Continued.

and the purple flowers, which are double or semidouble, occur very plentifully in nodding corymbs. The color of the flowers varies with lighter and darker shades. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2993.*)

43719. Rosa moschata Mill. Rosaceæ. **Musk rose.**

A tall climbing species reaching to the tops of lofty trees, the stems and branches armed with short, scattered, stout-hooked prickles. The leaves are up to 8 inches in length and consist of five to nine narrowly oval leaflets. The flowers are at first pale yellow, changing to almost pure white, are about 1½ inches wide, and are produced in corymbose clusters, often forming an inflorescence over a foot wide. The fruits are red and about one-third of an inch in width. This rose, which has long been cultivated in England, is found from southern Europe to northern India and China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 434.*)

43720. Rosa multiflora cathayensis Rehd. and Wils. Rosaceæ. **Rose.**

A vigorous, hardy, and handsome rose with the habit of the Japanese *Rosa multiflora.* The pink flowers are produced in large many-flowered clusters. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 35.*)

See also S. P. I. No. 42981 for further information.

43721. Rosa murielae Rehd. and Wils. Rosaceæ. **Rose.**

A slender-branched shrub, up to 8 feet in height, with bristles and slender prickles. The leaves are composed of 9 to 15 glabrous, serrate leaflets. The solitary flowers are pink. This rose is found in eastern three to seven flowered corymbs. The orange-red fruit is from one-half to three-fourths of an inch long. This rose is a native of southwestern China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2998.*)

43722. Rosa oxyodon Boiss. Rosaceæ. **Rose.**

A prickly stemmed shrub with leaves composed of five to seven oval leaflets. The solitary flowers are pink. This rose is found in eastern Caucasia, Russia. (Adapted from *Boissier, Flora Orientalis, vol. 2, p. 674.*)

43723. Rosa prattii Hemsl. Rosaceæ. **Rose.**

A slender-branched shrub, up to 8 feet in height, with numerous bristles and slender prickles. The leaves are composed of 7 to 15 obtuse, serrate leaflets, and the pink flowers, which occur one to three in a cluster, are three-fourths of an inch wide. The scarlet fruit is about one-third of an inch long. This rose is a native of western China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2998.*)

43724. Rosa spinosissima L. Rosaceæ. **Scotch rose.**

A dwarf bush, rarely more than 3 or 4 feet high, with erect short-branched stems covered with slender spines and stout bristles intermixed. The leaves are composed of five, seven, or nine round or oval leaflets, which are dark green and quite smooth. The white or pale-pink solitary flowers are from 1½ to 2 inches wide, and the globose fruit is dark brown, finally blackish, from one-half to three-fourths of an inch

43703 to 43736—Continued.

in diameter. This rose is very widely spread in Europe and northern Asia and is frequently found in England on dry hills near the sea. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 445.*)

43725. ROSA SPINOSISSIMA L. Rosaceæ. **Scotch rose.**

Var. *fulgens* Bean.

A dwarf bush, from 3 to 4 feet high, with erect short-branched stems. The leaves are composed of five, seven, or nine round or oval leaflets, which are dark green and quite smooth. The bright rose-colored solitary flowers are from 1½ to 2 inches wide, and the globose fruit is dark brown, finally blackish. This rose is widely spread in Europe and northern Asia. The typical species has white or pale-pink flowers. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 445, 446.*)

43726. ROSA VILLOSA L. Rosaceæ. **Rose.**
(*R. pomifera* Herrmann.)

Var. *multiplex.*

A short-branched, stout rose from 4 to 6 feet high, with scattered, slender, broad-based prickles up to half an inch long and leaves up to 7 inches in length. The deep rosy pink flowers are from 1½ to 2½ inches wide, produced in clusters of three to six or more, and the pear-shaped or roundish rich-red fruits are from 1 to 1½ inches long, bristly, and surmounted by the erect sepals. This rose is a native of central Europe. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 439.*)

43727. SORBARIA ARBOREA C. Schneid. Rosaceæ.

A tree, from 10 to 35 feet high, with the young twigs olive gray. The leaves are lance shaped or more often oblong, with the lower surfaces more or less hairy and the margin serrate. The white flowers are about one-fourth of an inch wide, and the fruit is probably one-sixteenth of an inch in diameter. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 490*, and from *Sargent, Plantae Wilsonianae, vol. 1, pp. 47, 48.*)

43728. SORBUS COMMIXTA Hedl. Malaceæ.

A shrub or tree, native of central and northern Japan, with bright-green, serrate, very variable leaves, usually composed of five to six pairs of glabrous leaflets. The white flowers occur in terminal corymbs, and the bright red, nearly globular fruits are about one-fourth of an inch in diameter. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, pp. 677, 678.*)

43729. SYRINGA JAPONICA (Maxim.) Decaisne. Oleaceæ. **Lilac.**

A deciduous tree or shrub up to 30 feet in height, of erect habit. The oval leaves are from 3 to 8 inches long, with a long tapering point, and the white flowers, which are not fragrant, are usually produced at the end of the branch in a pair of broad pyramidal panicles, 8 to 12 inches long. This tree or shrub is a native of Japan. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 567, 568.*)

43703 to 43736—Continued.

43730. Viburnum burejaeticum Regel and Herd. Caprifoliaceæ.

A shrub, 4 to 10 feet high, native of Chosen (Korea). The small light-green leaves and the small umbels of white flowers, followed by the jet-black berries, make this plant very ornamental. (Adapted from a *note of Frank N. Meyer, dated Aug. 20, 1906.*)

See also S. P. I. No. 20115 for previous introduction.

43731. Viburnum dilatatum Thunb. Caprifoliaceæ.

A deciduous shrub, 6 to 10 feet high, with broadly oval, pointed, hairy leaves. The pure white flowers are all fertile and are produced in June in a hairy 5-rayed cyme, 3 to 5 inches wide. The fruit is bright red and roundish oval in shape. The shrub is a native of Japan and China and is a very profuse bloomer. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 647.*)

43732. Viburnum hupehense Rehder. Caprifoliaceæ. **Honeysuckle.**

A deciduous shrub, native of Hupeh, China, with coarsely serrate, roundish oval leaves and flowers in large flat corymbs. The red fruit is egg shaped, from one-third to two-fifths of an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 650.*)

See also S. P. I. No. 42197 for further information.

43733. Viburnum ichangense (Hemsl.) Rehder. Caprifoliaceæ.

A slender-branched shrub, with yellowish green, oval, acuminate leaves. The white flowers occur in terminal and lateral corymbs up to 1⅝ inches wide, and the fruit is an ovoid drupe about one-fourth of an inch long and is red. The seed is brown. This shrub is a native of China. (Adapted from *Sargent, Trees and Shrubs, vol. 2, p. 105, pl. 150.*)

43734. Viburnum sargentii Koehne. Caprifoliaceæ.

A shrub, growing to a height of from 5 to 8 feet, with roundish leaves and flowers in flat corymbs. The rounded fruits are scarlet or orange-scarlet and ripen in September. (Adapted from *Florists' Exchange, May 20, 1911.*)

See also S. P. I. No. 37612 for further information.

43735. Viburnum theiferum Rehder. Caprifoliaceæ. **Honeysuckle.**

A deciduous shrub of erect habit, up to 12 feet in height, with smooth, gray stems. The narrowly oval leaves are sharply serrate, taper pointed, and dark green above. The white flowers are all perfect and are produced in terminal cymes 1½ to 2 inches in width. The red fruit is egg shaped and nearly half an inch long. This shrub is a native of central and western China. The specific name refers to the use of the leaves by the monks of Mount Omei as a kind of tea. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 657.*)

43736. Viburnum wrightii Miquel. Caprifoliaceæ.

A deciduous shrub, 6 to 10 feet high, with erect stems. The bright-green leaves are 2 to 5 inches in length and are slenderly pointed. The white flowers are all perfect and are produced in May on smooth, downy stalked, 5-rayed cymes, 2 to 4 inches in width. The roundish oval red fruits are one-third of an inch long. This shrub is a native of Japan and China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 660.*)

43737 to 43739. Pyrus communis L. Malaceæ. **Pear.**

From Ottawa, Canada. Cuttings presented by the director, Central Experiment Farm. Received December 6, 1916.

"Prof. A. J. Logsdail, assistant in plant breeding at the Central Experiment Farm, tells me that the varieties of Russian pears constitute a part of an original introduction by the late William Saunders 25 to 30 years ago. Out of a large number of pears brought in from Russia, the following three varieties are the only survivors. They have proved to be very hardy as far as cold resistance is concerned, and have also proved, in a large measure, blight resistant. I saw the three trees growing while at Ottawa last September; they were vigorous specimens, the trunks being 8 to 10 inches in diameter, and they had a fine growth of wood and foliage. I saw no evidence of blight on the trees. The fruit of all three varieties is said to be fairly good. They here partake of all the characteristics of the Russian types." (*B. T. Galloway.*)

43737. "*Bessemianka* (°–7753). Blight resistant and very hardy." (*W. T. Macoun.*)

43738. "*Kurskaya* (°–7705). Particularly blight resistant and very hardy." (*W. T. Macoun.*)

43739. "*Zuckerbirne* (°–7729). Particularly blight resistant and very hardy." (*W. T. Macoun.*)

43740. Prunus serrulata sachalinensis (Schmidt) Makino. (*P. sargentii* Rehder.) [Amygdalaceæ. **Sargent's cherry.**

From Tokyo, Japan. Purchased from the Tokyo Plant, Seed, & Implement Co. Numbered December 9, 1916.

A deciduous tree, 40 to 80 feet in height, with a trunk sometimes 3 feet in diameter and with sharply serrate oval leaves which are often reddish when young. The deep-pink flowers are from 1¼ to 1½ inches wide, and are produced in short-stalked umbels with two to six flowers in each umbel. The fruit is a small black cherry, one-third of an inch in diameter. This tree is a native of Japan and is cultivated in England and in the United States. It is probably the finest timber tree among the true cherries and is also remarkable for its beautiful flowers, which appear in April. The seeds germinate freely after lying dormant for a year. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 250, 251.*)

43741. Tecoma argentea Bur. and Schum. Bignoniaceæ.

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received December 1, 1916.

"Seeds of a tree called in Spanish *Para todo* and in Guarani *quirai*. This tree is found in abundance in open fields among palmeras along the upper Paraguay River, both in Paraguayan Chaco and Matto Grosso. The bark is accredited among natives as 'a great remedy' and is also said to be used like quinine. The timber has merit for certain construction purposes." (*Mead.*)

43742. Lonicera similis delavayi (Franch.) Rehder. Caprifoliaceæ. **Honeysuckle.**

From Paris, France. Plants purchased from Messrs. Vilmorin-Andrieux Co. Received December 9, 1916.

A half-evergreen climbing shrub, entirely glabrous except for the under surface of the leaves. The leaves are narrow-oval to lance shaped, and the white flowers are about 2 inches long. This variety, which is found in central and western China, is the only one of this species in cultivation, and it differs from the typical species in the absence of the pubescence. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1914*, and from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 729.*)

43743 and 43744.

From Darmstadt, Germany. Purchased from Mr. Conrad Appel, through Mr. Julius G. Lay, American consul general, Berlin. Received December 7, 1916.

43743. AGROSTIS STOLONIFERA L. Poaceæ. Creeping bent-grass.

"Seeds of the true German creeping bent, 1916 crop." (*Appel.*)

43744. FESTUCA RUBRA L. Poaceæ. Red fescue.

"Seed of the true German red fescue, 1916 crop." (*Appel.*)

43745. PASSIFLORA MALIFORMIS × EDULIS VERRUCIFERA. Passifloraceæ. **Hybrid granadilla.**

Grown at the Plant Introduction Field Station, Chico, Calif. Numbered December 14, 1916.

"A cross between S. P. I. Nos. 39224, *Passiflora maliformis*, and 35215, *Passiflora edulis verrucifera*." (*R. L. Beagles.*)

43746. MUCUNA sp. Fabaceæ.

From Berea, Durban, Natal. Presented by Mr. P. van de Bijl, mycologist, Natal Herbarium. Received December 11, 1916.

"Seeds collected at Umbilo, Durban, Natal, October 29, 1916." (*Van de Bijl.*)

Received as *Canavalia bonariensis.*

43747 to 43753. AMYGDALUS spp. Amygdalaceæ. **Peach.**

From Fancheng, Hupeh, China. Seeds presented by Mr. Edwin S. Cunningham, American consul general, Hankow, who procured them from Mr. C. Stokstad. Received December 11, 1916. Quoted notes by Mr. Stokstad.

43747. AMYGDALUS PERSICA L.
(*Prunus persica* Stokes.)

"A large peach."

43748. AMYGDALUS PERSICA PLATYCARPA (Decaisne) Ricker.
(*Prunus persica platycarpa* Bailey.)

"A small disk-shaped peach."

43749 to 43753. AMYGDALUS PERSICA L.
(*Prunus persica* Stokes.)

43749. "A large luscious peach."

43750. "A large peach."

43751. "A downy peach, good for cooking."

43752. "A very large and most luscious peach, from our own orchard."

43753. "A large peach."

43754. PYRUS AMYGDALIFORMIS Vill. Malaceæ. **Pear.**

From Fresno, Calif. Presented by Mr. George C. Roeding, Fancher Creek Nurseries. Received December 13, 1916.

"Seeds of a pear growing on my place, the bud wood of which I secured in Smyrna, Asia Minor, in 1901, and a portion of which I forwarded to your Department [S. P. I. No. 7669]." (*Roeding.*)

43755. TIPUANA TIPU (Benth.) Lillo. Fabaceæ. **Tipu.**
(*T. speciosa* Benth.)

From Cairo, Egypt. Presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received December 6, 1916.

A tall, handsome tree, with rose-colored or creamy white wood, native of the subtropical, temperate, and cool regions of Argentina. (Adapted from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 58.*)

See also S. P. I. No. 42331 for further description.

43756 to 43758.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received October 23, 1916.

43756. AMPELOPSIS sp. Vitaceæ.

An ornamental woody vine with handsome, deciduous foliage.

43757. COTONEASTER MULTIFLORA CALOCARPA Rehd. and Wils. Malaceæ.

A shrub, up to 6 feet in height, with usually slender, arching branches and rather large, narrowly ovate leaves. The white flowers occur in many-flowered cymes, and the numerous red fruits are nearly half an inch in diameter. This shrub is a native of western China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, pp. 866, 867.*)

43758. COTONEASTER RACEMIFLORA SOONGORICA (Regel and Herd.) C. Schneid. Malaceæ.

An erect shrub, up to 4 feet in height, but rarely prostrate. The leaves are oval and usually somewhat obtuse, and the white flowers, 3 to 12, occur in short-peduncled cymes. The fruit is red. This variety is found in northern China, Caucasia, etc. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 867,* and from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 754.*)

43759 to 43762.

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received December 13, 1916. Quoted notes by Mr. Bircher.

43759. BRIDELIA RETUSA (L.) Spreng. Euphorbiaceæ.

"A small Indian tree which grows in every kind of soil. It flowers in November, and the black berries hanging in long racemes ripen early in spring. There is not much pulp on them, but they might be improved by continuous culture. A sauce can be prepared with the dry fruits."

43760. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. **Yerba maté.**

"This tree does well here and stands 110° F. and light frosts. These seeds come from imported trees which are only 4 years old; they germinate in a much shorter time (two to three months) than the seeds from wild trees, which need two or three years to come forth."

43759 to 43762—Continued.

43761. Moringa oleifera Lam. Moringaceæ. **Horse-radish tree.**
(*M. pterygosperma* Gaertn.)

"The pods of this variety are free of the bitter taste of the common horse-radish tree and are eaten like French beans if gathered when in a young state."

43762. Psidium pumilum Vahl. Myrtaceæ.

"A small shrub with small yellow fruits resembling those of *Psidium araca* in size and color, but with dry calyx segments. The fruit is very aromatic, with a much accentuated strawberry flavor. The leaves resemble the common guava, but are broader."

43763 to 43766.

From Bogota, Colombia. Presented by Capt. H. R. Lemly, Washington, D. C., who received them from Mr. G. E. Child, of Bogota. Received December 4, 1916.

43763. Annona cherimola Mill. Annonaceæ. **Cherimoya.**

This is the common form of the cherimoya as sold in the markets of Bogota.

43764. Carica papaya L. Papayaceæ. **Papaya.**

Seeds of the ordinary papaya sold in the markets at Bogota.

43765. Passiflora ligularis Juss. Passifloraceæ. **Sweet granadilla.**

The common form of granadilla sold in the markets at Bogota.

43766. Passiflora maliformis L. Passifloraceæ. **Curubá.**

This is the common *curubá* or Colombian granadilla sold in the markets of Bogota.

43767 to 43783.

From Cairo, Egypt. Presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received November 27, 1916.

43767. Aeschynomene elaphroxylon (Guill. and Perr.) Taub. Fabaceæ.
(*Herminiera elaphroxylon* Guill. and Perr.)

A leguminous tree, with compound leaves and yellow flowers, found growing on river banks with its stems in the water in many places in tropical Africa. The hairy pods are often sickle shaped, with two or more joints. When in flower this tree is very ornamental. The wood is exceedingly light and is used by the natives for making small boats and rafts. The only purpose for which this wood might be used commercially is for paper pulp, although it is strong and durable. (Adapted from *Kew, Bulletin of Miscellaneous Information, Additional Series IX, pp. 199, 200,* and from *Engler and Prantl, Natürlichen Pflanzenfamilien, III, 3, p. 319.*)

43768. Belou marmelos (L.) Lyons. Rutaceæ. **Bel.**
(*Aegle marmelos* Correa.)

This is the *bael* tree of India, where it attains a height of 40 feet. The leaves are deciduous, and the greenish yellow fruit reaches a diameter of 6 inches. The Hindus are very fond of this fruit. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, pp. 222, 223.*)

See also S. P. I. No. 43478 for further description.

43767 to 43783—Continued.

43769. BIGNONIA UNGUIS-CATI L. Bignoniaceæ.

A woody climber, with compound evergreen leaves and trumpet-shaped orange-yellow flowers about 2 inches long. This plant, which is a native of Argentina, will stand a little frost if grown in the open in the southern United States and is conspicuous and interesting because of the beauty and profusion of its flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 502.*)

43770. CAESALPINIA GILLIESII (Hook.) Wall. Cæsalpiniaceæ.

A shrub or small tree, native of Argentina, with leaves composed of 6 to 10 pairs of leaflets. The yellow flowers, with red stamens, are in large terminal panicles, and the fruit is a sickle-shaped pod. This plant is of value as an ornamental. (Adapted from *Löfgren, Notas sobre as Plantas Exoticas Sao Paulo, p. 39.*)

43771. CANAVALI ENSIFORME (L.) DC. Fabaceæ. **Jack bean.**

Var. *nanus.* This is a dwarf variety of the common jack bean and is apparently an unpublished garden variety, cultivated at Cairo, Egypt.

43772. CARISSA GRANDIFLORA (E. Mey.) DC. Apocynaceæ. **Carissa.**

A handsome shrub, originally from South Africa, now cultivated in southern Florida and southern California as an ornamental and for its scarlet edible fruits. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2114.*)

See also S. P. I. No. 41504 for further description.

43773. CASSIA BONARIENSIS Colla. Cæsalpiniaceæ.

An ornamental shrub with handsome compound leaves composed of four pairs of leaflets and racemes of bright-yellow flowers.

43774. DATURA METEL L. Solanaceæ.

An herbaceous plant, found in the western Himalayas and the mountains of West Dekkan Peninsula, and probably introduced into India. The leaves are heart shaped, almost entire, and pubescent, and the flowers are white. This plant is said to possess the same medicinal properties as the other species of this genus. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 3, pp. 39, 40.*)

43775. HAEMATOXYLUM CAMPECHIANUM L. Cæsalpiniaceæ. **Logwood.**

A tree, up to 40 feet in height, found in the Tropics from southern Mexico to Venezuela. It yields the Campeche wood or logwood of commerce, from which are made dyes and inks and also the chemical reagent hæmatoxylin. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 248.*)

43776. INDIGOFERA DOSUA Buch.-Ham. Fabaceæ.

A shrub, found in the central and eastern Himalayas at altitudes ranging from 6,000 to 8,000 feet. The flowers are said to be eaten as a pot herb in Kangra, India. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 2, p. 385.*)

See also S. P. I. No. 39119 for further description.

43777. MORINGA OLEIFERA Lam. Moringaceæ. **Horse-radish tree.**
(*M. pterygosperma* Gaertn.)

A small tree, cultivated as an ornamental in Cuba, usually about 15 to 20 feet in height, erect, with compound leaves nearly a foot long. The

43767 to 43783—Continued.

white flowers are borne in panicles, and the slender pods are often a foot long. (Adapted from *notes of Wilson Popenoe, July 16, 1915.*)

See also S. P. I. Nos. 40913 and 43761 for further description.

43778. Operculina tuberosa (L.) Meisn. Convolvulaceæ.
(*Ipomoea tuberosa* L.)

A perennial stout-stemmed herbaceous vine, with large, compound leaves and three to six yellow flowers on a long peduncle. The entire plant is used as a purgative. It is a native of Brazil. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises, pp. 398 and 567.*)

See also S. P. I. No. 43385 for further description.

43779. Prosopis chilensis (Molina) Stuntz. Mimosaceæ. **Algaroba.**
(*P. juliflora* DC.)

A leguminous tree, with small flowers in little heads or spikes. The pod is more or less thickened, and the leaves are composed of a large number of leaflets. This tree is a native of Mexico and the West Indies. (Adapted from a *note of W. Harris, Kingston, Jamaica, dated April 7, 1916.*)

See also S. P. I. No. 42643 for further description.

43780. Solanum torvum Swartz. Solanaceæ.

A shrub, from 8 to 10 feet in height, or sometimes flowering as an herb. The stems are prickly, and the unarmed hairy leaves are 4 inches long and 6 inches wide. The white flowers occur in many-flowered racemes and are about 1¼ inches in diameter. This shrub is distributed throughout tropical America, the Philippines, China, and the Malay Archipelago. (Adapted from *Hooker, Flora of British India, vol. 4, p. 234.*)

43781. Tecoma stans (L.) Juss. Bignoniaceæ.

A shrub found in the West Indies and Central America and sometimes cultivated as far south as Argentina. The leaves are composed of 5 to 11 pairs of lance-shaped leaflets, and the large yellow flowers occur in terminal panicles. The fruit is a silique, bearing a large number of winged seeds. This shrub is valued as an ornamental, both its flowers and its foliage being very attractive, and it readily adapts itself to many kinds of environment. (Adapted from *Löfgren, Notas sobre as Plantas Exoticas Sao Paulo, pp. 195, 196.*)

53782. Tithonia rotundifolia (Mill.) Blake. Asteraceæ.
(*Helianthus speciosus* Hook.)

A Mexican sunflower, growing to a height of about 5 feet, with a round stem and rather coarse lobed leaves, which are very susceptible to attacks by aphids. The orange-colored flowers of this plant make it very charming. (Adapted from *Curtis's Botanical Magazine, pl. 3295.*)

43783. Tristania conferta R. Br. Myrtaceæ.

A tall tree, with smooth, brown, deciduous bark and dense foliage. The alternate leaves are from 3 to 6 inches long, and the rather large flowers occur in 3 to 7 flowered cymes. This tree is a native of Australia, and the timber, which is very strong and durable, is used in shipbuilding and for making wharves and bridges. The bark is occasionally used for tanning. (Adapted from *Maiden, Useful Native Plants of Australia, pp. 330, 608. 609,* and from *Bailey, Queensland Flora, part 2, p. 636.*)

43784. DIMOCARPUS LONGAN Lour. Sapindaceæ. **Longan.**
(*Nephelium longana* Cambess.)

From Foochow, China. Presented by Dr. W. B. Schober, Cocoanut Grove, Fla., who received them from Mr. F. F. G. Donaldson. Received December 12, 1916.

"*Dragon's eyes*. *Lung leng*. A very delightful fruit." (*Donaldson.*)

43785. PERILLA FRUTESCENS (L.) Britton. Menthaceæ.
(*P. ocymoides* L.)

From Yokohaha, Japan. Procured from the Yokohama Nursery Co., at the request of the Institute of Industrial Research. Received December 21, 1916.

Numbered and distributed to determine where the seeds can be successfully grown and used for the extraction of oil.

43786. VIGNA CYLINDRICA (Stickm.) Skeels. Fabaceæ. **Catjang.**

From Keijo, Chosen (Korea). Presented by Miss Katherine Wambold. Received November 13, 1916.

"Used for making *tong pu*. Boil half an hour and season with salt." (*Wambold.*)

43787 to 43790.

From the city of Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 28, 1916. Quoted notes by Mr. Popenoe.

43787. ZEA MAYS L. Poaceæ. **Corn.**

"No. 45a. White flint corn purchased in the market of the city of Guatemala. It is said to have been raised near by in the highlands. The ears are large, measuring fully 12 inches in length, and taper gradually toward the tips. There are 12 to 14 rows of hard, white, translucent kernels. October 7, 1916."

43788. ACHRADELPHA VIRIDIS (Pittier) O. F. Cook. Sapotaceæ. **Green sapote.**

"No. 69a. Fifty seeds from fruits purchased in the market of the city of Guatemala. November 12, 1916."

For description, see S. P. I. No. 43439.

43789. ZEA MAYS L. Poaceæ. **Corn.**

"No. 67a. One ear of corn, presented by Señor Don Manuel Lemus, Director of Agriculture. This is of an interesting variety, called by Señor Lemus *Zea guatemalensis*. It originated in the Department of Zacatepequez, but this seed was grown in the vicinity of Guatemala. According to Señor Lemus this corn contains very little gluten, grows to a great height, and has proved to be a very valuable strain. November 12, 1916."

43790. ZEA MAYS L. Poaceæ. **Corn.**

"No. 68a. One ear of corn, presented by Señor Don Manuel Lemus, Director of Agriculture. This is the variety called by Señor Lemus *Zea guatemalensis*. It is a selected strain, slightly improved over the form sent under No. 67a [S. P. I. No. 43789], the ears being somewhat larger and having 14 rows of kernels. According to Señor Lemus as many as 16 rows have been found on some ears. November 12, 1916."

43791 to 43796.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received December 21, 1916. Quoted notes by Mr. Meyer.

43791. Ulmus pumila L. Ulmaceæ. **Elm.**

"Var. *pendula* Hort. (No. 1258. Peking, China. November 9, 1916.) Cuttings of a weeping form of the ordinary, very drought and alkali resistant elm from North China and Manchuria. The Chinese graft this variety on the trunk of the common form, generally from 5 to 8 feet above the ground. See S. P. I. No. 40507 for further information. Obtained from the Botanic Garden at Peking."

43792. Wistaria venusta Rehd. and Wils. Fabaceæ.

"(No. 1259. Peking, China. November 6, 1916.) Cuttings of a vigorously growing hardy species of wistaria, blooming at the end of April and early May, bearing multitudes of rather short and dense racemes of individually large flowers, which are of a purplish violet color when first coming out, but when fading away become of pale bluish color. They exhale a delightful scent. This species is quite drought resistant and tolerates a fair amount of alkali. The Chinese most often train it as an arbor over a garden walk or over an open space, underneath which seats and tables can be arranged for enjoyment of the beauty and fragrance of the flowers in spring and the shade of the foliage during the hot summer months. Chinese name *Teng lo*, meaning 'Winding rattan.' Obtained from the Botanic Garden at Peking."

43793. Punica granatum L. Punicaceæ. **Pomegranate.**

"(No. 1260. Peking, China. November 9, 1916.) Plants of a very dwarf form of pomegranate cultivated as an ornamental pot plant, said to bear sometimes as many as 100 fruits on one specimen. The fruits are too small to be of any economic value. Chinese name *Pai tze sheh liu*, meaning 'One hundredfold bearing pomegranate.'"

43794. Wistaria venusta Rehd. and Wils. Fabaceæ.

"(No. 2321a. Peking, China. November 9, 1916.) The same as No. 1259 [S. P. I. No. 43792]. The Chinese claim that among plants raised from seeds one obtains a great variety of colors in the flowers, ranging all the way from pure white to dark purple. Obtained from the Botanic Garden at Peking."

43795. Wistaria venusta Rehd. and Wils. Fabaceæ.

"(No. 2322a. Tientsin, China. November 1, 1916.) The same species as the preceding number [S. P. I. No. 43794], but coming from a colder locality. Collected in Victoria Park, Tientsin."

43796. Pinus bungeana Zucc. Pinaceæ. **Pine.**

"(No. 2323a. Lungen Temple, Sankiatien, near Peking, China. October, 1916.) The well-known Chinese white-barked pine; 100 catties of seeds, collected for the department through the kindness of Mr. J. V. A. MacMurray, First Secretary of the American Legation at Peking."

43797. Rosa xanthina Lindl. Rosaceæ. Rose.

Grown at the Plant Introduction Field Station, Rockville, Md. Numbered December 27, 1916.

Seedlings of S. P. I. No. 21620 from a plant grown in Mr. Edward Goucher's garden.

43798. Acacia constricta Benth. Mimosaceæ.

Collected west of the Organ Mountains of New Mexico by Dr. David Griffiths, of the Bureau of Plant Industry. Received December 21, 1916.

"A spiny shrub 3 to 6 feet high. It is one of the most common of our desert covers from southwestern Texas to southern Arizona and thrives even in regions receiving but 8 to 9 inches of rainfall. The inflorescence is yellow, globular, prolific, and exceedingly attractive for several weeks when the shrub is in blossom. It is one of the good bee plants of the Southwest, being closely related to the *cat's-claw* and *huajillo*. The shrub will be a useful ornament in California, and possibly farther north in the coast country. It habitually withstands a temperature of zero without injury." (*Griffiths.*)

43799 to 43801. Juglans regia L. Juglandaceæ. **Walnut.**

From Srinagar, Kashmir, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens, Seharunpur, who secured these walnuts from Mr. H. C. Koul, manager, Koul's Fruit Gardens. Received December 19, 1916.

43799. "*Kaghazi.* These are not very good walnuts. The best ones are expected shortly and we fear they, too, will not be the best, as all Kashmir fruit has been more or less injured this year by a long drought followed by excessive rain. Such a season occurs here once in 12 or 24 years." (*Koul.*)

43800. "*Burzul.* These are the larger of the two kinds. They are about the best, but not the very best." (*Koul.*)

43801. "*Wantu.* These are not very good, but the kernel is good enough and more oily than the other varieties." (*Koul.*)

43802 to 43807. Jasminum spp. Oleaceæ. **Jasmine.**

From Ventimiglia, Italy. Cuttings presented by the La Mortola Gardens. Received December 26, 1916.

43802. Jasminum azoricum L.

A climbing shrub from the island of Madeira with opposite, evergreen, compound leaves, and terminal clusters of white, fragrant flowers, which appear throughout the year under favorable circumstances. It has been long cultivated in temperate greenhouses and is propagated by cuttings. (Adapted from *Curtis's Botanical Magazine, vol. 44, pl. 1889*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1718.*)

43803. Jasminum heterophyllum Roxb.

A stout shrubby jasmine from Natal, with shiny, alternate, narrowly oval leaves, up to 5 inches long. The flowers are yellow, up to one-third of an inch long, and occur in compound cymes. (Adapted from *Hooker, Flora of British India, vol. 3, pp. 601, 602.*)

43804. Jasminum odoratissimum L.

A diffuse shrub from the Madeira Islands, becoming rather large at times, with straight, stiff branches, alternate leaves composed of three to five shining oval leaflets, and terminal clusters of yellow flowers, which appear in summer. It is odorous, though not more so than many jasmines. It is comparatively hardy and may be propagated by cuttings. (Adapted from *Curtis's Botanical Magazine, vol. 7, pl. 285*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1719.*)

43802 to 43807—Continued.

43805. JASMINUM OFFICINALE L.

A long, slender, scarcely self-climbing plant, native of India and Persia, but now widely cultivated throughout the warmer portions of the earth. The leaves have two or three pairs of sharp-pointed leaflets, and the white flowers occur in terminal more or less leafy clusters. In the southern United States the glossy foliage and the white summer-blooming flowers make the plant very attractive, and with protection it will grow as far north as Philadelphia. (Adapted from *Curtis's Botanical Magazine, vol. 1, pl. 31*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1718.*)

43806. JASMINUM SIMPLICIFOLIUM Forst. f.

A climbing shrub or sometimes a tree, found in Australia and the Friendly Islands, with opposite, shiny, oval leaves usually less than 3 inches long and white flowers about half an inch long, in terminal, branched, many-flowered clusters. It may be propagated by cuttings; it flowers in June and July. (Adapted from *Curtis's Botanical Magazine, vol. 25, pl. 980*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1717.*)

43807. JASMINUM SINENSE Hemsl.

A climbing shrub from central and southern China, with papery leaves composed of three oval or narrowly oval leaflets up to 3, or, occasionally, 6 inches long. The white flowers are 1½ inches long and occur in dense cymose panicles. (Adapted from *Forbes and Hemsley, Jour. Linn. Soc., vol. 26, pp. 80, 81.*)

43808. CORCHORUS CAPSULARIS L. Tiliaceæ. **Jute.**

From Amoy, China. Presented by Messrs. E. F. Spears & Sons, Paris, Ky., who received it from Mr. Chan Goan Sin, Amoy. Received December 22, 1916.

"Jute is an annual plant, requiring a rich, moist, well-drained, alluvial soil and a warm, moist climate, free from frost for at least six months. It will grow in sandy loam or alluvial soils from Maryland to Florida and Texas, but will not ripen much seed north of the cotton belt. The seed is sown broadcast, the crop harvested by hand, retted in water, and the fiber cleaned by hand from the wet stalks in the water. It could be grown profitably in this country if there were satisfactory methods of removing the fiber from the stalks and preparing it for market. The fiber is used for burlaps, bagging, and gunny sacks." (*L. H. Dewey.*)

43809. ZIZIPHUS JUJUBA Mill. Rhamnaceæ. **Jujube.**

(*Z. sativa* Gaertn.)

From Keijo, Chosen (Korea). Presented by Miss Katherine Wambold. Received November 13, 1916.

"*Tai chu.* Eaten as they are and much used at feasts." (*Wambold.*)

43810 to 43925.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum and selected by Mr. H. C. Skeels and Dr. W. Van Fleet, of the Bureau of Plant Industry. Received November 23, 1916. The following plants and cuttings:

43810 to 43925—Continued.

43810. Acer cissifolium (Sieb. and Zucc.) Koch. Aceraceæ. **Maple.**

A deciduous Japanese maple of compact, rounded habit, becoming 30 feet or more high, with leaves composed of three leaflets up to 3½ inches in length. The minute flowers are produced in May with the leaves, and the keys, which are about an inch long, occur in long racemes. In autumn the foliage turns red and yellow. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, pp. 137, 138.*)

43811. Acer miyabei Maxim. Aceraceæ. **Maple.**

A deciduous Japanese maple growing from 30 to 40 feet high, with a trunk up to 1½ feet in diameter and deeply 3-lobed leaves. The flowers are yellow and downy, appearing in corymbs 2 to 3 inches long, and the keys are up to an inch in length. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 148.*)

43812. Acer rufinerve Sieb. and Zucc. Aceraceæ. **Maple.**

A small, deciduous Japanese maple, with smooth, bluish white, young shoots and dark-green, irregularly serrate, 3-lobed or obscurely 5-lobed leaves. The flowers occur in erect racemes about 3 inches long, and the keys are up to three-fourths of an inch long. Occasionally the young foliage, the leafstalks, and the midribs are red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, pp. 157, 158.*)

43813. Acer tetramerum Pax. Aceraceæ. **Maple.**

A tree from central and western China, with oval or oblong leaves from 2 to 3½ inches long and staminate flowers in few-flowered sessile racemes. The keys are slender stalked and the nutlets are thick and strongly veined. It is graceful, hardy, and variable, and reaches a height of 25 feet. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 202.*)

43814. Amygdalus nana L. Amygdalaceæ. **Russian almond.**
(*Prunus nana* Stokes.)

A bush from Russia and western Asia, growing to a height of 3 to 5 feet, with thick, rather stiff, sharply serrate, lance-shaped leaves. The pinkish or white flowers are usually solitary and about an inch wide, and the small, hard fruit is hairy and bitter and contains a large, wrinkled, sharp-pointed pit. In Europe this bush is cultivated for its flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2832.*)

43815 and 43816. Amygdalus persica L. Amygdalaceæ.
(*Prunus persica* Stokes.) **Flowering peach.**

43815. A double, pale pink-flowered ornamental variety of the common peach.

43816. A double, red-flowered variety.

43817. Berberis aggregata C. Schneid. Berberidaceæ. **Barberry.**

(Wilson No. 1050. From thickets in the Min Valley, western Szechwan, at altitudes of 1,300 to 2,300 meters. October, 1908.)

A shrub from western China, 3 to 5 feet high, with yellowish brown spines in clusters of threes, rather small oval-oblong leaves with a few

43810 to 43925—Continued.

distant serrations, yellow, almost sessile flowers about a quarter of an inch wide in dense racemes, and salmon-red fruits. (Adapted from *Schneider, Bulletin L'Herbier Boissier, series 2, vol. 8, p. 203*, and from *Sargent, Plantae Wilsonianae, vol. 1, p. 375.*)

43818. BERBERIS BRACHYPODA Maxim. Berberidaceæ. **Barberry.**

(No. 7175.)

A bush from western China, 4 to 7 feet high, with 3-parted spines, oval serrate leaves, yellow flowers in long slender panicles, and scarlet fruits which are up to half an inch in diameter. In its native country this barberry grows at elevations of 5,200 to 11,700 feet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 375*, and *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 922.*)

43819. BERBERIS CIRCUMSERRATA C. Schneid. Berberidaceæ. **Barberry.**

"No. 604 Purdom. Originally from the Tai-pei-shan, Shensi, China."

A bush from central China, up to 7 feet high, with roundish oval leaves with very numerous and slender spine-tipped serrations. The spines are 3-parted, about half an inch long, and the bright-yellow flowers, half an inch wide, are solitary or in twos or threes on a common stalk. The scarlet fruits are oblong, slightly bloomy, and nearly a half inch long. In autumn the leaves turn scarlet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 354*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 491*, as *Berberis diaphana.*)

For a later and more complete technical description, see *Plantae Wilsonianae, vol. 3, p. 435.*

43820. BERBERIS JULIANAE C. Schneid. Berberidaceæ. **Barberry.**

A western Chinese shrub up to 7 feet in height, with 3-cleft spines up to 1⅝ inches long; thick, leathery, narrowly oval leaves up to 3 inches long; small yellow flowers; and, probably, pruinose fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 361.*)

43821. BERBERIS POIRETI C. Schneid. Berberidaceæ. **Barberry.**

A shrub found in northern China and Amurland, with slender, arching branches and spines about one-third of an inch long. The leaves are narrowly lance shaped, about an inch long and green beneath. The yellow flowers occur in many-flowered racemes from 1 to 2 inches long, and the deep blood-red fruits are oval oblong. This shrub is hardy and handsome, but is not often found in cultivation. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 490.*)

43822. BERBERIS POIRETI C. Schneid. Berberidaceæ. **Barberry.**

"Purdom No. 250."

See previous number, S. P. I. 43821, for description.

43823. BERBERIS SARGENTIANA C. Schneid. Berberidaceæ. **Barberry.**

A black-berried barberry from western Hupeh, China, reaching a height of 7 feet. It is the only evergreen barberry which has proved entirely hardy at the Arnold Arboretum. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 359.*)

For further data, see S. P. I. No. 42973.

43810 to 43925—Continued.

43824. Berberis subcaulialata C. Schneid. Berberidaceæ. **Barberry.**

(Wilson No. 1267. From thickets at Mupin, western Szechwan, at altitudes of 2,000 to 2,300 meters, October, 1908.)

A thickly branched shrub from Tibet, up to 4½ feet high, with spines up to an inch in length, thick-skinned, lance-shaped leaves about an inch long, and globular, reddish yellow fruits one-fourth of an inch in diameter. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 919.*)

43825. Berberis tischleri C. Schneid. Berberidaceæ. **Barberry.**

(Wilson No. 4385. From thickets at Tatsienlu, western Szechwan, at altitudes of 3,200 to 3,400 meters, October, 1910.)

A shrub from western China, 7 to 14 feet high, with spines in threes, papery spine-tipped leaves up to 1¼ inches in length, and yellow flowers about two-fifths of an inch wide, occurring in dense racemes. The somewhat pruinose egg-shaped red fruits appear in October and are up to two-fifths of an inch long. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 355.*)

43826. Berberis yunnanensis Franch. Berberidaceæ. **Barberry.**

A deciduous shrub, from 3 to 6 feet high, with dense, rounded spines and nearly circular leaves. The flowers are pale yellow, and the berries are bright red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 253.*)

See also S. P. I. No. 40153 for further description.

43827. Betula grossa Sieb. and Zucc. Betulaceæ. **Birch.**

A tree found on the higher mountains of Japan, attaining a large size, with stout branches and wide-spreading crowns. The leaves are oval and from 2 to 4 inches long, unequally serrate, and hairy in the lower surfaces. The strobiles are oval egg shaped and are nearly sessile. The bark of the branchlets has a cherry flavor. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 478.*)

43828. Betula schmidtii Regel. Betulaceæ. **Birch.**

A large tree with thick branches, found only in the Province of Shimotsuke, Hondo, Japan. It grows up to 65 feet tall, with a trunk 3½ to 7½ feet thick and black bark which falls off in thick, rather small plates. The finely serrate leaves are short stemmed, and the catkins are narrow, stiff, and erect. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, pp. 475, 476.*)

43829. Buddleia stenostachya Rehd. and Wils. Loganiaceæ.

A shrub of western China with narrowly oblong leaves 2 to 6 inches long and usually three long, slender, terminal panicles of fragrant lavender flowers with orange-colored eyes. This species is tender and flowers during the winter in the greenhouse. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, pp. 585, 586.*)

43830. Buxus microphylla japonica (Muell. Arg.) Rehd. and Wils. Buxaceæ. **Japanese box.**

An evergreen Japanese shrub of loose habit, from 3 to 4 feet high, with the young stems conspicuously winged. The roundish leaves are up to three-fourths of an inch long, and the flowers, which are produced very freely in March and April, are of no beauty. Owing to its ungainly

43810 to 43925—Continued.

habit and unhealthy aspect it is one of the least ornamental of the boxes. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 277.*)

43831. Caragana arborescens Lam. Fabaceæ. **Pea tree.**

A deciduous Siberian shrub of erect habit, up to 20 feet in height, which by pruning may be made to take the form of a small tree. The pinnate leaves are from 1½ to 3 inches long, and the yellow flowers are up to seven-eighths of an inch long and are produced singly on thin downy stalks. The pods are about 2 inches long and contain from three to five oblong seeds. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, pp. 287, 288.*)

43832. Castanea henryi (Skan) Rehd. and Wils. Fagaceæ. **Chestnut.**

A tree from 50 to 65 feet in height, found in the Province of Shantung, China. It is closely related to the common American chinquapin, but has larger dimensions throughout, including the nuts, which are edible. (Adapted from *Dode, Notes Dendrologiques, in Bulletin de la Société Dendrologique de France, No. 6, pp. 156, 157, 1908.*)

See also Plantae Wilsonianae, vol. 3, pp. 196–197, for full discussion and description.

43833. Clematis tangutica (Maxim.) Korsh. Ranunculaceæ.

A deciduous, woody, climbing plant from central Asia growing 8 or 10 feet high, with raggedly serrate gray-green leaflets. The rich yellow flowers are solitary, and the fruits are crowned with long feathered styles. This is said to be the handsomest yellow-flowered clematis in cultivation, the flowers sometimes being 4 inches wide. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 367.*)

43834. Clethra barbinervis Sieb. and Zucc. Clethraceæ. **White alder.**

A shrub or tree from eastern Asia, up to 30 feet high, with oval-oblong, pointed, sharply serrate, hairy veined leaves from 3 to 6 inches long and panicled racemes of white fragrant flowers, which appear from July to September. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 802.*)

43835. Cotoneaster bullata Bois. Malaceæ.

A deciduous shrub from western China and Tibet, from 10 to 12 feet high, with a few long arching branches. The dark-green oval or oblong leaves are up to 3½ inches long, and the rosy white flowers are in corymbs of from 10 to 30. The brilliant red fruit is pear shaped or round and one-third of an inch wide. The beauty of this plant lies in the fruit and not in the flowers. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 407.*)

43836. Cotoneaster bullata floribunda (Stapf) Rehd. and Wils. Malaceæ.
(*C. moupinensis floribunda* Stapf.)

A shrub with nearly oval, dark-green, bullate leaves up to 3 inches in length. The flowers are white tinged with pink, but are of little ornamental value because they fall soon and are of small size. The globose red fruits occur abundantly in September on the upper side of the long arching shoots and give the plant a very beautiful appearance. This shrub is found in western China. (Adapted from *Curtis's Botanical Magazine, vol. 135, pl. 8284.*)

43810 to 43925—Continued.

43837. CRYPTOMERIA JAPONICA (L. f.) D. Don. Pinaceæ.

An evergreen pyramidal tree, 100 to 180 feet high in Japan. The general aspect of the tree is yellowish green in summer and dark green in winter. It is one of the great timber trees of the world, more used in Japan than any other. It likes a deep, good soil, a sheltered position, and abundant rainfall. It is a variable tree. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 438.*)

43838. CYTISUS NIGRICANS ELONGATUS Borkh. Fabaceæ. **Black broom.**

"Var. *Carlieri* Hort."

A deciduous European shrub, from 2 to 4 feet high, with erect, pubescent branches and long-stemmed leaves composed of oval, pubescent leaflets up to an inch in length. The yellow flowers occur in very slender racemes from 3 to 8 inches in length. This variety differs from the typical species in that it blooms a second time in the autumn at the top of the elongated fruiting racemes. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 948.*)

43839. DECUMARIA SINENSIS Oliver. Hydrangeaceæ.

A climbing shrub from central China with generally oblong or obtuse leaves up to 3 inches in length and small white flowers in terminal corymbs. The fruit is a capsule filled with numerous minute seeds. This shrub is very ornamental because of its handsome, glossy foliage and its white flowers, which are very fragrant. It thrives in almost any humid soil and is propagated by greenwood cuttings in summer under glass, and rarely by seeds. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 974.*)

43840. DEUTZIA HYPOLEUCA Maxim. Hydrangeaceæ.

(*D. discolor* Maxim., not Hemsl.)

A Japanese shrub with sharp-pointed, serrulate, oval leaves with hairy lower surfaces and flowers either solitary or in clusters of two or three. The fruits are capsules about one-eighth of an inch long. (Adapted from *Maximowicz, Bulletin Academie Imperiale, vol. 32, pp. 487.*)

43841. DIERVILLA CORAEENSIS (Thunb.) DC. Caprifoliaceæ.

(*D. grandiflora* Sieb. and Zucc.)

A Japanese shrub from 6 to 10 feet high, with oval, long-pointed leaves 3 to 5 inches long, with bristly leafstalks. The flowers are pale pink at first, changing to carmine, and are produced during June in corymbs of three flowers each. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 491.*)

43842. DIERVILLA JAPONICA SINICA Rehder. Caprifoliaceæ.

A shrub from central China, up to 20 feet high, with oval-oblong, serrate, slender-stemmed leaves. The rose-pink bell-shaped flowers are usually in 3-flowered cymes. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1008.*)

43843. DIERVILLA MIDDENDORFFIANA Carr. Caprifoliaceæ.

A low shrub from Siberia, northern China, and Japan, with serrate leaves and yellowish white flowers which are spotted orange or purplish inside and occur in small terminal or axillary clusters. It is hardy, but rarely does well in cultivation and should have a cool and moist climate and be sheltered from strong winds. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1009.*)

43810 to 43925—Continued.

43844. Diervilla middendorffiana Carr. Caprifoliaceæ.

"Var. *Maximowiczii.*"

Apparently an undescribed horticultural variety.

43845. Enkianthus campanulatus (Miquel) Nicholson. Ericaceæ.

A Japanese shrub, 15 or occasionally 30 feet high, with elliptic leaves up to 3 inches long and yellowish or pale-orange flowers with darker veins borne in drooping racemes. One of the handsomest species and the most vigorous grower. In autumn the foliage turns a brilliant red. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1115.*)

43846. Enkianthus cernuus rubens (Maxim.) Makino. Ericaceæ.

A Japanese shrub up to 15 feet high, with bright-green, serrate leaves from 1 to 2 inches long, red flowers one-third of an inch long, and capsules on hanging stalks turned upward at the end. In the typical species the flowers are white. It is hardy in Massachusetts and is propagated by seeds sown in the spring, by cuttings of ripe wood under glass in spring, by greenwood cuttings in summer, and by layering. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1115.*)

43847. Euonymus radicans acutus Rehder. Celastraceæ.

A low, procumbent shrub from central China, with climbing and rooting branches and elliptic, sharp-pointed leaves having dull-green upper surfaces and white veins. The greenish white flowers are in slender cymes, and the fruit is a pale pink, globular capsule. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1188.*)

43848. Hydrangea opuloides serrata (Thunb.) Rehder. Hydrangeaceæ. (*H. serrata* DC.)

A Japanese bush growing about 1½ feet high, with elliptic, serrate, sharp-pointed leaves from 2 to 4 inches long and pinkish or bluish flowers in flat cymes. (Adapted from *Dippel, Handbuch der Laubholzkunde, vol. 3, pp. 325, 326, fig. 173.*)

43849. Hypericum patulum henryi Bean. Hypericaceæ. **St.-John's-wort.**

A spreading evergreen Chinese shrub, 1½ to 3 feet high, with smooth, purplish, 2-edged branches, oval, obtuse leaves 2 to 3 inches long, and yellow flowers 2 to 2½ inches wide. This variety is hardier than the other forms of this species and grows more vigorously. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1631.*)

43850. Indigofera amblyantha Craib. Fabaceæ. **Indigo.**

An upright shrub from central China, 3 to 6 feet high, with compound bright-green leaves from 4 to 6 inches long, very numerous small pink flowers in slender, axillary racemes and linear, hairy pods. The pink flowers bloom all summer long, and the shrub is propagated by cuttings and seeds. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1646.*)

43851. Larix potanini Batal. Pinaceæ. **Larch.**

A tree from western China, from 60 to 70 feet high, with yellowish young shoots and somewhat pointed leaves about an inch long. The cones are egg shaped and about 1½ inches long. This tree has much the

43810 to 43925—Continued.

aspect of the common larch, and, according to Mr. E. H. Wilson, yields the most valuable timber in China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 9.*)

43852. LIGUSTRUM ACUTISSIMUM Koehne. Oleaceæ. **Privet.**

Seeds of this plant were introduced under S. P. I. No. 43694.

43853. LIGUSTRUM QUIHOUI Carr. Oleaceæ. **Privet.**

A small or medium-sized privet, native of Shensi, China, found growing in rocky banks. The masses of small black berries contrast well with the evergreen foliage. (Adapted from a *note of Frank N. Meyer, dated July 10, 1914.*)

See also S. P. I. No. 38807 for further description.

43854. LONICERA CHAMISSOI Bunge. Caprifoliaceæ. **Honeysuckle.**

An upright shrub up to 1 meter tall. The branchlets are smooth; the leaves are oval to ovate, rounded at both ends, seldom pointed, distinctly veined. The corolla is smooth, deep violet, and about 12 mm. long; the red berries are profusely produced. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 713.*)

43855. LONICERA RAMOSISSIMA Franch. and Savat. Caprifoliaceæ. **Honeysuckle.**

A very handsome Japanese honeysuckle with oval, hairy leaves up to an inch in length and long-stemmed yellowish flowers. The fruits are scarlet and give the plant a striking appearance. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1914.*)

43856. LONICERA TRICHOSANTHA Bur. and Franch. Caprifoliaceæ. **Honeysuckle.**

A deciduous bush, reaching a height of 8 feet, with oval, dull-gray leaves. The flowers are pale yellow, and the berries are red. It is a native of Szechwan, China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 59.*)

See also S. P. I. No. 40185 for further description.

43857. MALUS ARNOLDIANA Rehder. Malaceæ. **Crab apple.**

Seeds of this plant were introduced under S. P. I. No. 43700.

43858. MALUS SARGENTI Rehder. Malaceæ.

A bushy shrub from 3 to 5 feet high, with oval leaves up to 3 inches in length. The pure white flowers are an inch wide, and the fruit is bright red. It is a native of Japan. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 293.*)

See also S. P. I. No. 41572 for further description.

43859. MORUS ACIDOSA Griffith. Moraceæ. **Mulberry.**

Usually a broad shrub from 3 to 16 feet high, found in Hupeh and Szechwan, China, but occasionally it forms a tree up to 25 feet in height. The leaves are variable in size and shape and are not used for feeding silkworms. The fruits when ripe are shining black or dark red and are palatable. A native name is *Ai-sang.* (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, p. 300.*)

43860. PHILADELPHUS SATSUMANUS Siebold. Hydrangeaceæ.

An erect, Japanese shrub, from 6 to 8 feet high, with oval, long-pointed leaves up to 6 inches in length. The slightly scented flowers are white,

43810 to 43925—Continued.

about 1¼ inches wide, and are produced in erect racemes, with 5 to 11 flowers in each raceme. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 140.*)

43861. PINUS ARMANDI Franch. Pinaceæ. **Pine.**

A medium-sized pine, native of Shensi, China, producing large cones full of large edible seeds, which are collected by the priests in the temples. (Adapted from a *note of Frank N. Meyer, dated June 8, 1914.*)

See also S. P. I. No. 38468 for further description.

43862. POPULUS MAXIMOWICZII A. Henry. Salicaceæ.

A magnificent poplar, the largest in eastern Asia, becoming 100 feet high and 6 feet in diameter. The pale-brown branchlets are densely pubescent, and the nearly circular leaves, which are whitish or rusty beneath, are about 4 inches long. The fruiting catkins are from 7 to 10 inches long, remaining on the tree unopened until late summer or autumn. The shapely head and attractive foliage make this hardy poplar very desirable. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2763.*)

43863. PRINSEPIA UNIFLORA Batal. Amygdalaceæ.

A spiny shrub, native of Shansi, China, growing to a height of 3 to 5 feet. The pale rosy flowers appear in early May, and the dark-red fruits are juicy but sour. (Adapted from a *note of Frank N. Meyer, dated Nov. 17, 1914.*)

See also S. P. I. No. 39432 for further description.

43864. PRUNUS APETALA (Sieb. and Zucc.) Franch. and Savat. Amygdalaceæ.

A shrub or tree from Japan, with oblong or oval-oblong leaves which are deeply and doubly serrate and 1 to 2 inches long. The flowers have deep purple calyces and petals which are very small and which fall off very soon. In this country this cherry is little known in cultivation. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2842.*)

43865. PRUNUS CERASIFERA DIVARICATA (Ledeb.) C. Schneid. Amygdalaceæ.

A small tree, native of Caucasia, reaching a height of 10 or 12 feet. The white flowers are solitary, and the yellowish fruit is about an inch long. (Adapted from *Nicholson, Dictionary of Gardening, vol. 3, p. 235.*)

See also S. P. I. No. 37463 for further description.

43866. PRUNUS GRAYANA Maxim. Amygdalaceæ. **Gray's bird cherry.**

A small tree from 20 to 30 feet high, native of Japan. The leaves are finely serrate, and the white flowers are borne in erect racemes up to 4 inches long. The fruit is black, about the size of a pea. This cherry grows in the mountain forests in its native country and is very uncommon in cultivation. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 237.*)

43867. PRUNUS MAXIMOWICZII Rupr. Amygdalaceæ.

A deciduous tree, up to 20 or 30 feet high, with oval leaves and dull yellowish white flowers. The globose fruit is one-sixth of an inch in diameter and black when ripe. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 243.*)

See also S. P. I. No. 40189 for further description.

43810 to 43925—Continued.

43868. PRUNUS PILOSIUSCULA BARBATA Koehne. Amygdalaceæ.

A shrub or tree of western China, sometimes up to 40 feet in height, with deeply serrate, oval, or oblong leaves with tufts of hair on the lower surfaces, pink, usually solitary flowers, and oblong red fruits. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2836,* and from *Sargent, Plantae Wilsonianae, vol. 1, p. 203.*)

43869. PRUNUS PROSTRATA Labillard. Amygdalaceæ. **Bush cherry.**

A bush cherry found on stony and sterile mountain slopes in the Province of Samarkand, Turkestan. It bears multitudes of small red cherries of a sour taste. (Adapted from a *note of Frank N. Meyer, dated July 9–11, 1910.*)

See also S. P. I. No. 28945 for further description.

43870. PRUNUS SUBHIRTELLA ASCENDENS (Makino) Wilson. Amygdalaceæ.

A tall, strong tree, native of central China and probably also in Chosen (Korea) and Japan, with wide-spreading branches but few branchlets, causing the head to have a thin appearance. The flowers are rosy pink with red calyces, and the very small, globular, blackish red cherries are somewhat astringent. It is cultivated in Japan and has been recently introduced into the United States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2841.*)

43871. PRUNUS TOMENTOSA ENDOTRICHA Koehne. Amygdalaceæ.

A deciduous shrub from 4 to 8 feet high or a tree up to 22 feet in height found in western Hupeh and northern Shensi, China. The flowers are white, tinted with rose. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 256,* and from *Sargent, Plantae Wilsonianae, vol. 1, p. 225.*)

See also S. P. I. No. 42576 for further description.

43872. AMYGDALUS TRILOBA (Lindl.) Ricker. Amygdalaceæ.
(*Prunus triloba* Lindl.)

Var. *Simplex.* A flowering peach much cultivated in the gardens of northern Chihli. The colors of its flowers range from pale pink to a dark violet rose. (Adapted from a *note by Frank N. Meyer, dated July 23, 1913.*)

See also S. P. I. No. 36718 for further description of the species.

This seems to be an unpublished garden variety with single flowers.

43873. RHAMNUS DAVURICUS NIPPONICUS Makino. Rhamnaceæ.

A large, spreading Japanese shrub with stout thorny branches and narrowly oblong leaves, with pale-green lower surfaces, up to 6 inches in length. The flowers occur in 2 to 5 flowered clusters, and the fruit is black. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2924.*)

43874. RHAMNUS JAPONICUS Maxim. Rhamnaceæ.

A Japanese shrub up to 8 or 9 feet in height, with glossy, pale-green leaves from 1 to 3 inches long and greenish brown flowers produced in May in dense clusters at the ends of short branches. The round fruit is a quarter of an inch in diameter. This shrub flowers with great freedom, and the flowers have a faint, pleasant fragrance. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 334.*)

43810 to 43925—Continued.

43875. RHUS TRICHOCARPA Miquel. Anacardiaceæ.

A deciduous tree, native of Japan, growing from 20 to 25 feet high, with compound leaves from 12 to 20 inches long, very downy on both sides. The inconspicuous flowers occur in slender long-stalked panicles, and the fruits are large, pale, prickly drupes, ripening in August and September. This tree is hardy in the United States, where the leaves turn a deep orange red in autumn. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 395.*)

43876. RIBES FASCICULATUM CHINENSE Maxim. Grossulariaceæ.

This shrub from northern China grows to a height of 4 feet, with somewhat heart shaped, 3 to 5 lobed leaves up to 5 inches in width, persisting until the beginning of the winter. The small greenish flowers are diœcious, and the bright scarlet berries remain on the branches all winter. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2960.*)

43877. RIBES LURIDUM Hook. f. and Thoms. Grossulariaceæ.

An unarmed shrub from the Himalayas and western China, with glabrous red branchlets and 3 to 5 lobed leaves up to 2 inches in width. The dark purple flowers occur in upright racemes, and the fruits are black and glabrous. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2964.*)

43878. ROSA AMBLYOTIS Meyer. Rosaceæ. **Rose.**

The seeds of this plant were introduced under S. P. I. No. 43707.

43879. ROSA BANKSIOPSIS Baker. Rosaceæ. **Rose.**

A very common rose in western Hupeh, China, found on mountain slopes at altitudes of from 4,000 to 7,000 feet. The flowers are rose red, and the fruits are coral red. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 322.*)

See also S. P. I. No. 42974 for further description.

43880. ROSA BELLA Rehd. and Wils. Rosaceæ. **Rose.**

A shrub, up to 8 feet in height, with leaves composed of seven to nine leaflets. The solitary pink flowers are 1¾ to 2 inches wide, and the scarlet fruit is ovoid and three-quarters of an inch long. This rose is a native of northwestern China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2997.*)

43881. ROSA BELLA Rehd. and Wils. Rosaceæ. **Rose.**

"Purdom No. 314. Mountains in northwest Shansi, April, 1910."

See previous number, S. P. I. No. 43880, for description.

43882. ROSA CAUDATA Baker. Rosaceæ. **Rose.**

The seeds of this plant were introduced under S. P. I. No. 43710.

43883. ROSA CAUDATA Baker. Rosaceæ. **Rose.**

"Wilson No. 4418. From thickets, Fanghsien, western Hupeh, at an altitude of 6,500 feet, October, 1910."

This rose is a tall, vigorous shrub up to 13 feet in height, native of western China. It has stout, arching stems, dark-green foliage, flowers about 2 inches in diameter, and orange-red fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 321.*)

See also S. P. I. No. 42976 for further information.

The seeds of this plant were introduced under S. P. I. No. 43710.

43810 to 43925—Continued.

43884. Rosa corymbulosa Rolfe. Rosaceæ. **Rose.**

An unarmed or sparingly prickly rose from central China. The numerous small flowers, which are deep rose above and white at the base, are from three-quarters to an inch wide. (Adapted from *Kew Bulletin of Miscellaneous Information, New Garden Plants of the Year, 1915, p. 80.*)

See also S. P. I. No. 42977 for further description.

43885. Rosa corymbulosa Rolfe. Rosaceæ. **Rose.**

"Wilson No. 625 (7170–1). From thickets at Hsingshanhsien, western Hupeh, at altitudes of 1,300 to 3,600 feet, November, 1907."

See S. P. I. No. 43884 for description.

43886. Rosa davidii Crép. Rosaceæ. **Rose.**

A pink-flowered rose from western Szechwan, China, reaching a height of 16 feet and growing at altitudes of 1,600 to 3,000 meters. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 322.*)

See also S. P. I. No. 42978 for further description.

43887. Rosa davurica Pall. Rosaceæ. **Rose.**

This rose, which is allied to the Cinnamon rose, is found in Manchuria, Dahuria, and Sakhalin, and has slender, straight prickles. The flowers are purple and the fruit scarlet. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2997.*)

43888. Rosa ecae Aitch. Rosaceæ. **Rose.**

A very spiny, shrubby rose, flowering in early summer, with an abundance of small, deep-yellow flowers. Recommended for hybridization to create perfectly hardy yellow roses. (Adapted from a *note of Frank N. Meyer, dated July 10, 1910.*)

See S. P. I. 28978 for further description.

43889. Rosa eglanteria L. Rosaceæ. **Rose.**

A dense shrub, originally from Europe, of compact habit and with bright-green foliage, giving off a very agreeable aromatic odor. The flowers are bright pink and the fruit is orange-red. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2990.*)

43890. Rosa fedtschenkoana Regel. Rosaceæ. **Rose.**

A very handsome rose from the Turkestan and Kokand regions of central Asia. It is a much-branched, very prickly shrub, with compound leaves 4 to 5 inches long and large white flowers occurring singly or as many as four in a cluster. The red fruits are somewhat pear shaped. When introduced into England this rose developed into a rambling, free-growing shrub, which flowered in the month of June. (Adapted from *Curtis's Botanical Magazine, vol. 127, pl. 7770.*)

43891. Rosa filipes Rehd. and Wils. Rosaceæ. **Rose.**

"Wilson No. 1228. From thickets near Wenchuan Hsien, western Szechwan, at altitudes of 4,000 to 7,000 feet; November, 1908."

A shrub producing long runners, reaching a height of 15 feet, with a few hooked prickles. The leaves are composed of five to seven serrate leaflets, and the fragrant, white flowers occur in large, loose corymbs, the individual flowers being about an inch across. The scarlet, globose fruits are up to half an inch in diameter. This rose is a native of western China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2997.*)

43810 to 43925—Continued.

43892. Rosa filipes Rehd. and Wils. Rosaceæ. **Rose.**

See previous number, S. P. I. No. 43891, for description.

43893. Rosa foetida Herrmann. Rosaceæ. **Austrian briar rose.**

A shrub with long, slender runners or climbing stems, becoming 10 feet high, usually with straight thorns. There are from five to nine dark-green, doubly serrate leaflets in the compound leaves, and the bright-yellow flowers, which have an unpleasant odor, are from 2 to 2½ inches wide. The fruits are globular. This rose is a native of western Asia. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2995.*)

43894. Rosa gentiliana Lev. and Van. Rosaceæ. **Rose.**

A shrub with long runners, growing up to 2 feet in height, with scattered hooked thorns. The leaves are composed of five glabrous serrate leaflets, and the white, fragrant flowers are up to 1½ inches wide and occur in corymbs. The fruits are globose and dark red. This rose is a native of central China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2997.*)

43895. Rosa helenae Rehd. and Wils. Rosaceæ. **Rose.**

A vigorous, hardy shrub with bright-green foliage, native of western China. The pure white flowers are 1½ inches in diameter and delicately fragrant. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 39.*)

See also S. P. I. No. 42979 for further description.

43896. Rosa helenae Rehd. and Wils. Rosaceæ. **Rose.**

"Wilson No. 666. From woodlands, Wushanhsien, western Hupeh, at altitudes of 3,300 to 5,000 feet, December, 1907."

See previous number, S. P. I. No. 43895, for description.

43897. Rosa helenae Rehd. and Wils. Rosaceæ. **Rose.**

"Wilson No. 431b. From thickets at Patunghsien, western Hupeh, at altitudes of 2,000 to 4,000 feet, June, 1907."

See S. P. I. No. 43895 for description.

43898. Rosa jackii Rehder. Rosaceæ. **Rose.**

A long-stemmed rose with the stems lying flat on the ground. It is a native of Chosen (Korea), and has pure white flowers 2 or more inches in diameter. (Adapted from *Arnold Arboretum Bulletin of Popular Information, vol. 1, p. 43.*)

See S. P. I. No. 42980 for further description.

43899. Rosa laxa Retz. Rosaceæ. **Rose.**

This rose, which is found from Turkestan to Songaria and Altai, is an upright shrub with paired, hooked thorns. The leaflets are small and light green, and the flowers are small and white. The small fruits are oval-oblong. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2998.*)

43900. Rosa macrophylla Lindl. Rosaceæ. **Rose.**

A shrub, native of the Himalayas and western China, becoming 8 feet or more in height, with erect stems and arching branches, usually furnished with straight prickles up to half an inch in length. The leaves, which are composed of 5 to 11 leaflets, are up to 8 inches in length. The

43810 to 43925—Continued.

deep pink or red flowers are up to 3 inches in width and are produced singly or in clusters of varying number. The elongated pear-shaped fruit is bright red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 433.*)

43901. ROSA MOYESII Hemsl. and Wils. Rosaceæ. **Rose.**

"Wilson No. 1495a."

This rose from western China grows from 6 to 10 feet in height and has erect stems armed with scattered broad-based spines. The compound leaves are from 3 to 6 inches long, and the flowers, which are a lurid dark red, are from 2 to 2½ inches wide and occur singly or in pairs. The bottle-shaped fruits are red and crowned by the erect persistent sepals. This is a very hardy rose, and in its native country it is found at elevations of 9,000 feet and over. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 435.*)

43902. ROSA MULTIBRACTEATA Hemsl. and Wils. Rosaceæ. **Rose.**

A rose from western China growing about 6 feet high, with straight paired thorns. The leaves are composed of seven to nine broadly oval leaflets, and the pink flowers, which occur in corymbs or singly, are 1¼ inches wide. The ovoid fruit is orange-red with persistent sepals. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2998.*)

43903. ROSA MULTIFLORA CATHAYENSIS Rehd. and Wils. Rosaceæ. **Rose.**

The seeds of this plant were introduced under S. P. I. No. 43720.

43904. ROSA OMEIENSIS Rolfe. Rosaceæ. **Rose.**

A stout, branched shrub, from 3 to 10 feet high, with the young shoots covered with dense bristles and the older stems armed with stout, straight thorns. The long, green leaves are composed of 9 to 13 sharply serrate leaflets, and the white flowers, which are over an inch in diameter, occur singly on short lateral twigs. The bright-red fruits are up to half an inch in length, and their yellow stalks are very striking in autumn. These fruits are said to be eaten in China, where the plant grows at elevations of 8,000 to 9,000 feet. It thrives in good loamy soil and may be propagated from the freely produced seeds. (Adapted from *Curtis's Botanical Magazine, pl. 8471.*)

43905. ROSA OMEIENSIS PTERACANTHA (Franch.) Rehd. and Wils. **Rose.**
(*R. sericea pteracantha* Franch.) Rosaceæ.

This Chinese rose is found in the Province of Yunnan and differs from the typical species in having the stems covered with much-flattened spines, which are short and compressed and whose bases are very broad. The white flowers are solitary, and the fruit is pear shaped and bright red. (Adapted from *Franchet, Plantae Delavayanae, p. 220,* and from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 438.*)

43906. ROSA POUZINI Tratt. Rosaceæ. **Rose.**

This rose, from southern Europe and northern Africa, rarely exceeds 7 feet in height. The leaves are composed of five to seven or sometimes nine serrate leaflets, and the small flowers are pale or deep pink, rarely white. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 563.*)

43810 to 43925—Continued.

43907. Rosa prattii Hemsl. Rosaceæ. **Rose.**

A slender-branched shrub, up to 8 feet in height, with numerous bristles and slender prickles. The leaves are composed of 7 to 15 obtuse, serrate leaflets, and the pink flowers, which occur one to three in a cluster, are three-quarters of an inch wide. The scarlet fruit is about one-third of an inch long. This rose is a native of western China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2998.*)

The seeds of this plant were introduced under S. P. I. No. 43723.

43908. × Rosa rubella J. E. Smith. Rosaceæ. **Rose.**

This is a hybrid between *Rosa spinosissima* and *Rosa pendulina.* It has dark-green foliage, red flowers, and pendulous, oval-oblong, scarlet fruits. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2995.*)

43909. Rosa rugosa × macrophylla. Rosaceæ. **Rose.**

This is apparently a hybrid of recent origin, from the Arnold Arboretum.

43910. Rosa saturata Baker. Rosaceæ.

This rose from central China is a shrub about 8 feet in height, nearly unarmed, with compound, sharply serrate leaves. The solitary flowers are dark red with purplish anthers and are about 2 inches wide. The nearly round fruit is coral red and three-quarters of an inch long. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2998.*)

43911. Rosa saturata Baker. Rosaceæ. **Rose.**

"Wilson No. 316. A bush 3 to 7 feet tall with rose-red flowers and coral-red fruits from thickets at Fanghsien, western Hupeh, at elevations of 5,000 to 7,000 feet, July and September, 1907."

See previous number, S. P. I. No. 43910, for description.

43912. Rosa sertata Rolfe. Rosaceæ. Rose.

A shrub of elegant habit, up to 5 or more feet in height. The flowers are purplish rose, and the fruit is bright red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 443.*)

See also S. P. I. No. 40193 for further description.

43913. Rosa spinosissima L. Rosaceæ. **Scotch rose.**

"Yellow."

The seeds of this plant were introduced under S. P. I. No. 43724.

43914. Rosa spinosissima hispida (Sims) Koehne. Rosaceæ. **Rose.**

This rose, which is probably a native of Siberia, has stems thickly covered with straight thorns and attains a height of 4 or 5 feet. The leaves are compound and serrate, and the solitary flowers are pale yellow. This rose is cultivated in England and is said to be perfectly hardy. (Adapted from *Curtis's Botanical Magazine, vol. 37, pl. 1570.*)

43915. Rosa sweginzowii Koehne. Rosaceæ. **Rose.**

A rose from western Szechwan, with deep pink flowers, growing to a height of 16 feet at altitudes of 2,300 to 3,600 meters. The stems are covered with short, stout, flattened prickles. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 324.*)

43810 to 43925—Continued.

43916. ROSA XANTHINA Lindl. Rosaceæ. **Rose.**

A remarkably hardy yellow rose, found in the vicinity of Peking, Chihli, China. It resists drought and extremes of heat and cold to an unusual degree. (Adapted from a *note of Frank N. Meyer, dated March 31, 1908.*)

See also S. P. I. Nos. 17469, 22452, and 23034 for further description.

43917. RUBUS PILEATUS Focke. Rosaceæ.

A woody climber from the Province of Hupeh, China, reaching 4 feet in height, with pinnate leaves composed of five pairs of leaflets. The flowers, two to four, occur at the ends of the branches, and the fruits, which are about an inch in diameter, are edible and pleasant in taste. (Adapted from *Hooker's Icones Plantarum, vol. 20, p. 3, under pl. 1952.*)

43918. SAGERETIA PYCNOPHYLLA C. Schneid. Rhamnaceæ.

A climbing, spiny shrub from western China, up to 7 feet high, with opposite branches, small, opposite oval leaves up to three-quarters of an inch long, and small sessile flowers in spikelike terminal and axillary racemes. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, pp. 226, 227.*)

43919. SAMBUCUS CALLICARPA Greene. Caprifoliaceæ.
Red-berried elder.

A shrub, very common in wet ground on the coast of the northwestern United States, attaining a height of 7 to 15 feet, with smooth, brown bark, leaves composed of five to seven lance-oblong, serrate leaflets 2 to 5 inches long, pyramidal panicles of cream-colored flowers, and bright scarlet, sometimes chestnut-colored, rarely yellow berries. (Adapted from *Piper and Beattie, Flora of the Northwest Coast, p. 337.*)

43920. SPIRAEA LUCIDA Dougl. Rosaceæ.

A low shrub found at low elevations in the mountains of the western United States. It reaches a height of about 24 inches and has small white flowers and coarsely serrate leaves. It is hardly distinguishable from the typical species found in the East. (Adapted from *Piper and Beattie, Flora of the Northwest Coast, p. 202.*)

43921. SPIRAEA MEDIA Schmidt. Rosaceæ.

An erect shrub, found from eastern Europe to Japan and Sakhalin and growing to a height of 6 feet, with oval or oblong, more or less serrate leaves up to 2 inches in length. The small white flowers are produced late in the spring in long-stalked racemes. It is an ornamental species, but is liable to be injured by late spring frosts. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 639.*)

43922. SYRINGA REFLEXA C. Schneid. Oleaceæ. **Lilac.**

A bush from western China, 7 to 10 feet high, with oval, sharp-pointed leaves and violet flowers in long, hanging racemes. On account of the remarkable inflorescence of this lilac it is quite distinct from all others of its kind. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 779,* and from *Sargent, Plantae Wilsonianae, vol. 1, p. 297.*)

43810 to 43925—Continued.

43923. THEA JAPONICA (L.) Baill. Theaceæ. **Camellia.**
(*Camellia japonica* L.)

An evergreen shrub, native of Japan and China, sometimes becoming a small tree up to 40 feet in height, with deep, glossy green leaves 3 to 4 inches long and solitary red flowers, 2½ to 4 inches wide, appearing at the end of the branchlets. The oil expressed from the seeds is used by the Japanese women for dressing their hair. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, pp. 284, 285.*)

43924. VIBURNUM HUPEHENSE Rehder. Caprifoliaceæ. **Honeysuckle.**

Seeds of this plant were introduced under S. P. I. No. 43732.

43925. VIBURNUM THEIFERUM Rehder. Caprifoliaceæ. **Honeysuckle.**

The seeds of this plant were introduced under S. P. I. No. 43735.

43926. CARICA PAPAYA L. Papayaceæ. **Papaya.**

Grown at the Plant Introduction Field Station, Miami, Fla. Received December 19, 1916.

"Seeds from selected fruits." (*Simmonds.*)

43927. ANNONA CHERIMOLA Mill. Annonaceæ. **Cherimoya.**

From the city of Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 28, 1916.

"No. 66a. Seeds of the cherimoya, or *anona* as it is called here. These are from choice fruits, mainly from Antigua, but are sent in principally for the purpose of producing stock plants on which to bud superior varieties of the cherimoya. In Florida this may not be the best stock for the cherimoya, but in California it seems to be the only species so far tested which is suitable. November 12, 1916." (*Popenoe.*)

For an illustration of the Guatemalan cherimoyas, see Plate VIII.

43928 to 43930. CARICA PAPAYA L. Papayaceæ. **Papaya.**

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Agricultural Experiment Station. Received December 18, 1916.

"Probably in no other region has systematic improvement of the papaya been given so much attention as in Hawaii. Mr. J. E. Higgins and others have attempted to breed superior strains which would reproduce themselves when propagated by seed and strains which would remain regularly hermaphroditic, thus eliminating the necessity of planting staminate trees. The papaya is an important breakfast fruit in Hawaii. In few other regions is it so highly esteemed and in few are there varieties of such excellent quality." (*Popenoe.*)

43928. "No. 2355 : 1."
43929. "No. 3681."
43930. "No. 4325."

43931. PERSEA SCHIEDEANA Nees. Lauraceæ. **Coyó.**

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received December 29, 1916.

"No. 73. From Sepacuite, Department of Alta Vera Paz. The *coyó*, a fruit closely allied to the avocado, which is evidently the same species as the *chucte*, or *shucte*, sent in from El Rancho under No. 72. It is said to vary greatly in character of fruit, some being inferior and others very choice, as in the avocado. The tree from which this bud wood was taken stands by the porch of the old house at Finca Sepacuite and is said by Mr. Kensett Champney to produce fruits of very good quality." (*Popenoe.*)

43932 to 43935. Persea americana Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Guatemala. Bud sticks collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received December, 1916, to July, 1917.

43932. "(Nos. 74, 95, 155. Avocado No. 8.) *Coban.* This variety enjoys something of a reputation in Coban as an avocado of unusually fine quality. In addition, it has a small seed and other good characteristics, which combine to make it a promising sort.

"The parent tree stands in the sitio of Filadelfo Pineda, in Coban, Department of Alta Vera Paz. The elevation is 4,325 feet. The ground beneath the branches is given out to a vegetable garden, with the exception of that to the east side, which is cut off by a tall hedge of chichicaste (*Loasa speciosa*). The soil is a heavy clay loam, probably underlain by stiff clay. According to the owner, the tree is 30 or more years of age. It is about 40 feet high, with a dense, dome-shaped crown fully 40 feet broad. The trunk is 18 inches in diameter at the base, branching some 10 feet from the ground. At the present time the tree is badly attacked by several insect pests and does not appear to be in good condition. It appears normally to be reasonably vigorous in growth, the young branches being somewhat slender, but not very brittle. The bud wood furnished by the tree is fairly good, the eyes being well developed and showing no tendency to drop at an early stage. The twigs are at times slender and angular.

"The climate of Coban is mild; hence, there is nothing to indicate that this variety will be any hardier than the average of the Guatemalan race.

"The flowering season is February and March. Up to a few years ago the tree is said to have borne large crops of fruit, but at present it does not seem to be doing so well, perhaps owing to the weakened condition of the tree as a result of the attacks of insects and other pests. When first examined in December, 1916, there were only a few fruits on the tree, perhaps a dozen, and after the flowers which were produced in 1917 had fallen only a few fruits were found to be left on the tree for the next season, most of them having fallen before they attained the size of walnuts. They were malformed, as though from the attacks of some parasite. The ripening season is said to be February to March, a few fruits being picked in December and January and some hanging on the tree until April or May.

"This is a fruit of medium size, weighing about 15 ounces. In form it is pear shaped, tending to obovoid. The surface is slightly rough, deep green in color, while the skin is moderately thick, hard, and woody. The flesh is of unusually deep yellow color, quite free from discoloration of any kind, smooth and oily, and of unusually rich flavor. The seed is rather small in comparison to the size of the fruit and is perfectly tight in the seed cavity.

43932 to 43935—Continued.

"The variety may be formally described as follows: Form obovoid, obovoid-pyriform, slightly oblique; size above medium, weight 15 ounces, length 4⅝ inches, greatest breadth 3⅜ inches; base rounded, the stem inserted obliquely without depression; apex rounded; surface slightly rough, deep green in color with a few small yellowish dots; skin moderately thick, one-eighth of an inch or slightly more, coarsely granular; woody and brittle; flesh deep yellow in color, changing to pale green near the skin, of fine, smooth texture and free from discoloration of any sort, the flavor rich and pleasant; quality excellent; seed rather small in comparison to the size of the fruit, roundish oblate in form, about 1¾ ounces in weight, with both seed coats adhering closely and fitting tightly in the seed cavity." (*Popenoe.*)

43933. "No. 75. From San Cristobal Vera Paz, December 14, 1916. *Chilan.* Avocado No. 9, from the dooryard of an Indian in the southwest quarter of the village of San Cristobal. A very attractive small fruit, selected first for its earliness in ripening and secondly for its productiveness and good quality.

"It is more or less pear shaped, weighs about half a pound, is nearly smooth externally and of a bright green color, while the seed is unusually small and the flesh is of a good quality for an early-ripening variety. It is noteworthy that nearly all the early varieties I have found in Guatemala are inferior in richness of flavor to those which ripen later, and it also seems that a great many of them have large seeds. This was especially notable in the fruits examined around Antigua. Form elliptic pyriform, not distinctly necked; size below medium, weight 8 to 9 ounces, length 3¾ inches, breadth 2¾ inches; base narrowly pointed, the stem inserted almost squarely without depression; apex obliquely flattened though not conspicuously so; surface nearly smooth, bright green in color, with numerous minute yellowish dots; skin one-sixteenth to nearly one-eighth of an inch thick, coarsely granular and woody, brittle; flesh cream color, tinged with pale green near the skin, free from fiber, and of smooth, firm texture; flavor nutty, pleasant, not so oily as in some of the later varieties; quality good; seed small in comparison with the size of the fruit, broadly elliptic to spherical in form, weight 1 ounce, both the seed coats rather thin and adhering closely to the smooth cotyledons. The parent tree is about 45 feet high, with a spread about equal in height. The trunk is 2 feet thick at the base. Apparently the fruits must commence to ripen in October or November, since a great many have already fallen, as indicated by the quantity of fresh seeds beneath the tree. A large proportion of the fruits left on the trees seem still to be immature, so that this variety can probably be considered to have a very long season. The tree is carrying an enormous crop, as may be expected of one whose fruits are of this size. It is probably safe to say that it will produce more than 2,000 fruits this season. This has every appearance of being a very desirable variety." (*Popenoe.*)

43934. "(Nos. 76, 96, 156, 188. Avocado No. 10.) *Kashlan.* In quality this is one of the finest avocados in the set. It has the additional advantage of good size, convenient shape for handling, and a seed which is unusually small in size. Taken all round, this is an exceptionally

43932 to 43935—Continued.

promising variety, and it ripens earlier than many others, which makes it particularly worthy of trial in California, where early-ripening varieties of the Guatemalan race are greatly desired.

"The parent tree stands among coffee bushes in the sitio of Diego Muus, in the town of San Cristobal Vera Paz. The elevation here is 4,550 feet. Close to the tree, on the west, is a much larger avocado tree which crowds it considerably, and there is an Inga tree a few feet away on another side. The tree must be considered, therefore, to be growing under unfavorable surroundings. The soil is a heavy clay loam, blackish, and very fertile. While the owner is not certain as to the exact age of the tree, it is thought to be 8 or 10 years old. It stands about 25 feet high, with a slender, open crown rather sparsely branched. The trunk is 8 inches thick at the base, branching about 8 feet above the ground. The tree bears every indication of being a strong grower; the young branchlets are stout, long, and extremely healthy in appearance. The wood is no more brittle than the average. The bud wood furnished by the tree is excellent, having strong, vigorous eyes which are not inclined to drop at an early stage. The twigs are smooth, round, stout, with the eyes conveniently placed for cutting buds, i. e., not too close together.

"No frosts occur in San Cristobal Vera Paz; hence, there is no means of determining whether varieties growing here are hardier than the average or not. Until further evidence is obtained in the United States it must be assumed that varieties from elevations such as that of San Cristobal Vera Paz are of average hardiness.

"The flowering season is February. The tree is said to have come into bearing three years ago. It produced an excellent crop the past season, considering the size of the fruit and the unfavorable conditions under which the tree is growing. In 1917 it set no fruit. The crop which developed in 1916 was picked in January and February, 1917, when the fruit was considered to be mature. None were left on the tree, so it is impossible to say how late the fruits might hang on if they were allowed to do so.

"This fruit is broadly oval in form, slightly oblique, and weighs 20 to 22 ounces. It is green in color when ripe, practically smooth on the surface, with hard, brittle, but not unusually thick skin. The flesh is smooth, deep yellow in color, clean, and free from fiber. The flavor is very rich and pleasant. The seed is unusually small, weighing but 2 ounces, and fits tightly in its cavity.

"Following is a formal description of the variety: Form broadly oval, slightly oblique; size very large, weight 20 to 22 ounces, length 4½ inches, breadth 4 inches; base obliquely flattened, the stem inserted without depression; apex obliquely flattened, slightly depressed around the stigmatic point; surface pebbled, deep green in color, with numerous rather large yellowish dots; skin one-sixteenth of an inch thick, slightly thicker over some portions of the fruit, coarsely granular, and brittle; flesh of an unusually rich yellow color, changing to pale green near the skin, free from fiber or discoloration and of very rich flavor; quality excellent; seed very small in proportion to the size of the fruit, oblate, weighing 2 ounces, tight in the cavity, with both seed coats adhering closely to the cotyledons, which are slightly rough for this race." (*Popenoe.*)

43932 to 43935—Continued.

43935. "(Nos. 77, 97, 157, 189. Avocado No. 11.) *Chisoy.* As a commercial variety this avocado seems to be particularly promising. In form and size it is almost identical with the *Trapp* avocado of Florida, but it has a smaller seed. The quality is excellent, and the tree has borne two heavy crops in succession, which indicates that it will probably be as satisfactory in this respect as any in the set. Taken all around, No. 11 seems to be one of the best of all.

"The parent tree is growing in the cafetal (coffee plantation) of Señor Don Eusebio de la Cruz, in the town of San Cristobal Vera Paz. The elevation is 4,550 feet. Señor de la Cruz is the alcalde or mayor of San Cristobal and owns coffee plantations containing many aguacate trees, but he always reserves the fruits of this particular one for his private consumption and to present to his friends. Beneath the broad-spreading branches of this tree are numerous large coffee bushes, which benefit by the shade cast by the avocado. The soil is a heavy, blackish, clay loam of excellent fertility. No one knows the exact age of the tree; it is very large and probably very old. Fifty years can probably be set as the minimum. It is fully 50 feet high, with a broad-spreading, much-branched crown which is 60 feet in diameter. The trunk of the tree is 4 feet thick at the base. It branches about 12 feet above the ground. The growth seems to be quite vigorous, though the young branchlets are not so long as they would be if the tree were much younger. The wood is no more brittle than the average, and the branchlets are well formed and stout. The bud wood furnished by this tree is good; owing to the age of the tree the twigs are not so long as would be desired for most convenient handling, but the eyes are well formed and show no tendency to drop at an early stage.

"The hardiness of the variety can not be ascertained, since there is no frost at San Cristobal. Until subjected to cold weather in the United States it can only be assumed that the variety is of an average hardiness for the Guatemalan race.

"The flowering season is slightly later than the average, the tree being in full bloom on April 1, 1917. The crop produced from the 1916 bloom was very large. No count could be obtained, but it may be said that the bearing habit of the tree, as indicated by the 1916 and 1917 crops, seems highly satisfactory. In spite of the heavy crop from the 1916 bloom, the 1917 bloom was an equally heavy one, which is being carried to maturity. The fruits can be picked in February, but they are probably not really at their best until the first of March. The season is therefore a month or more later than the average. If allowed to remain on the tree, many of the fruits will hang on until April or perhaps even later.

"The fruit is handsome, and its quality does not belie its looks. It is as large as a good grapefruit (20 to 24 ounces), with a slightly rough skin of yellowish green color, somewhat thicker than the average, so that the fruit is bruised with difficulty. The flesh is of deep yellow color, firm and rather dry in texture, entirely free from discoloration of any sort, and of the richest possible flavor. No better avocado, in point of flavor, has been found in all Guatemala. The seed, in large specimens of the variety, is comparatively small, while in smaller specimens it appears to be a trifle large; the seed appears to develop to more or less the same size in every case, independent of

43932 to 43935—Continued.

the size of the fruit. Under good cultural conditions in North America the fruit should be of large size, and if the seed remains small, as it does in the large specimens produced by the parent tree, this will almost surely be one of the choicest avocados of the set. It is scarcely necessary to add that the seed is tight in the cavity, for this is the case with all of the avocados included in the set.

"The variety may be described formally as follows: Form spherical to oblate; size large to very large, weight 17 to 24 ounces, length 3⅞ to 4⅛ inches, greatest breadth 4 to 4½ inches; base rounded, the stem, which is about 5 inches long and moderately stout, inserted somewhat obliquely without depression; apex slightly flattened; surface uniformly pebbled, somewhat coarsely so, deep green to yellow green in color, with numerous large pale yellow green dots; skin moderately thick for this race, varying from one-sixteenth to one-eighth of an inch, hard and woody; flesh rich cream yellow to yellow in color, changing to pale green near the skin, free from fiber or discoloration, not watery, but very oily, smooth, and of rich, very pleasant flavor; seed oblate, 2 to 3 ounces in weight, tight in the cavity, with both seed coats adhering closely to the cotyledons, which are slightly rough for this race." (*Popenoe.*)

43936 to 43944.

From Bhutan, Asia. Collected by Mr. R. E. Cooper in the Himalaya Mountains and presented by Mr. A. K. Bulley, of Bees Ltd., Liverpool, England. Received December 13, 1916. Quoted notes by Mr. Cooper.

43936. CARAGANA sp. Fabaceæ.

"No. 5533. Shrub of rounded form on sand; flowers not seen, but fruiting on exposed hillsides at 11,000 feet altitude, Lahoul."

43937. THERMOPSIS sp. Fabaceæ.

"No. 5601. Tufted plant on alpine pasture with low herbs at 13,000 feet. Flowers not seen, but similar plant in Bhutan has Vandyke brown flowers. Plant 1 foot in diameter."

43938. COTONEASTER sp. Malaceæ.

"No. 5353. Stunted bush on exposed, sandy slopes in Lahoul at 10,000 feet altitude."

43939. GAULTHERIA sp. Ericaceæ.

"No. 5627 and 5599. Growing on peat nodules and among low scattered herbs on large rock faces at 13,000 feet altitude. Fruits blue."

43940. LONICERA sp. Caprifoliaceæ. Honeysuckle.

"No. 5625. Bush common on stony slopes near birch forests at 13,000 feet altitude; fruits red; flowers not seen. Plants dwarf, 10 inches, but spreading."

43941. LONICERA sp. Caprifoliaceæ. Honeysuckle.

"No. 5654. Six-inch bush with red fruit in pairs in sheltered bare hollows in Quercus forest at 11,000 feet."

43942. ROSA sp. Rosaceæ. Rose.

"No. 5391. Splendid bush, growing on dry walls at 10,000 feet altitude in Lahoul. Bush 10 feet through; sprays 6 to 8 feet long, full of flowers and showy red fruits in autumn."

43936 to 43944—Continued.

43943. Spiraea sp. Rosaceæ.

"No. 5633. Herb in alpine meadow in hollow with taller herbs. One foot high, only found in fruit, but remarkable for meal below leaves. Growing at 12,000 feet altitude."

43944. Viburnum sp. Caprifoliaceæ.

"No. 5640. Bush 2 to 4 feet, found below scattered and stunted oaks at 12,000 feet altitude. Fruit black, in pairs; flowers not seen."

43945 and 43946.

From Liverpool, England. Collected in the mountains of California and presented by Mr. A. K. Bulley, of Bees Ltd. Received December 13, 1916. Quoted notes by the collector.

43945. Amorpha californica Nutt. Fabaceæ.

"No. 26. A leguminous shrub with narrow racemes of blue flowers. Grows at 5,000 to 6,000 feet altitude in mesophytic to xerophytic conditions. The pinnate leaves and the architecture of the shrub are ornamental."

43946. Calycanthus occidentalis Hook. and Arn. Calycanthaceæ.

"No. 3. Spice bush. A handsome shrub, 5 to 10 feet tall, with maroon flowers. Foliage fragrant. Growing along the banks of streams."

43947. Koelreuteria formosana Hayata. Sapindaceæ.

From Formosa, Japan. Presented by the Experimental Station of Forestry. Received December 27, 1916.

A tree, native of Formosa, Japan, up to 60 feet high, with oval-oblong leaflets with nearly entire margins, up to 4 inches in length. The yellow flowers are in large terminal panicles, and the fruit is a bladderlike, inflated, 3-lobed capsule about 1⅝ inches long, containing black roundish seeds.

43948 to 43950.

From Paramaribo, Dutch Guiana. Seeds collected by Dr. J. A. Samuels. Received November 1, 1916.

43948. Alpinia exaltata (L. f.) Roem. and Schult. Zinziberaceæ. (*Renealmia exaltata* L. f.)

A plant belonging to the ginger family widely spread in tropical America. The fleshy oval fruit is finally black and yields a dye of some importance. (Adapted from a *note of W. E. Safford, May 8, 1916.*)

See S. P. I. No. 42799 for further information.

43949. Anacardium occidentale L. Anacardiaceæ. Cashew.

A small tree, about 20 feet high, found in the West Indies and South America, with rounded, oval leaves and rosy-tinted fragrant flowers in terminal clusters. The fruit is kidney shaped, about the size of a very large bean, and is borne on a fleshy receptacle 3 inches long and more, which contains a sweetish-sour edible pulp. The nuts are eaten like chestnuts, either raw or roasted, and contain a milky juice which is extremely acrid and corrosive. The tree yields a gum which is the basis of a varnish. (Adapted from *Hogg, Vegetable Kingdom, p. 245,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 279.*)

43948 to 43950—Continued.

43950. ASTROCARYUM sp. Phœnicaceæ. **Palm.**

"Astrocaryums are elegant palms of medium height, very suitable for moderate-sized conservatories. In a young state the plants require the temperature of the stove, and after attaining the height of a few feet they may be best grown in a warmhouse and given plenty of water; also a humid atmosphere. Specimens 8 to 10 feet high fruit freely." (*Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 425.*)

43951. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Dominica, British West Indies. Presented by Mr. Joseph Jones, curator, Botanic Gardens. Received December 18, 1916.

See S. P. I. Nos. 43446 and 43481 for previous introductions and descriptions.

43952. CARYA CATHAYENSIS Sarg. Juglandaceæ. **Hickory.**

From Hangchow, China. Presented by Dr. D. Duncan Main. Received December 18, 1916.

The only hickory so far found in China, a tall tree, 40 to 65 feet high, with grayish bark and leaves composed of five to seven lance-shaped or oval leaflets with upper surfaces soft green and the lower rusty brown. The nuts, which are thick shelled and elliptic in shape, are collected and sold as a sweetmeat; a fine clear yellow oil is extracted from them and used in fancy pastry. The wood is tough and strong and is used for tool handles. The tree thrives best at the foot of the mountains in narrow, moist valleys; it becomes crippled when exposed to much wind and can not stand much frost. (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, pp. 187, 188.*)

43953. TETRAZYGIA BICOLOR (Mill.) Cogn. Melastomaceæ.
(*Miconia bicolor* Triana.)

From Littleriver, Fla. Presented by Mr. Charles A. Mosier. Received December 13, 1916.

A West Indian shrub from 7 to 10 feet high, with narrowly oblong, sharp-pointed leaves, with the upper surfaces bright green and the lower golden yellow. The white flowers occur in many-flowered panicles up to 8 inches in length. (Adapted from *DeCandolle, Monographia Phanerogamarum, vol. 7, pp. 724, 725.*)

43954. LATHYRUS WATSONI White. Fabaceæ. **Vetchling.**

From Chico, Calif. Collected by Mr. Heller and transmitted to this office by Mr. R. L. Beagles, superintendent, Plant Introduction Field Station. Received December 18, 1916.

A perennial Californian herb with stout erect stems, 1½ to 2½ feet high, zigzag branches, light-green leaves, recemes of white flowers veined with purple, and pods about 2 inches long. (Adapted from *Jepson, Flora of Western Middle California, pp. 298, 299.*)

43955. QUERCUS SUBER L. Fagaceæ. **Cork oak.**

From Gibraltar, Spain. Secured through Mr. Richard L. Sprague, American consul. Received December 21, 1916.

"Spanish acorns gathered in the Almoraima corkwoods, district of Castellar, Spain." (*Sprague.*)

43956. Feronia limonia (L.) Swingle. Rutaceæ. **Wood-apple.**
(*F. elephantum* Correa.)

From Peradeniya, Ceylon. Seeds presented by Mr. T. H. Parsons, curator, Royal Botanic Gardens. Received December 18, 1916.

A spiny, deciduous tree, native of India and Indo-China, with compound leaves and nearly globular fruits filled with pinkish, edible pulp, which is used for making jelly. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1219.*)

See also S. P. I. No. 42268 for further information.

43957. Eucalyptus marginata J. E. Smith. Myrtaceæ.

From Sydney, New South Wales, Australia. Seeds presented by Dr. J. H. Maiden, director, Botanic Gardens. Received December 21, 1916.

An Australian tree, becoming tall under favorable circumstances, with lance-shaped leaves 3 to 6 inches long, and thick, hard, smooth, nearly globular fruits. A valuable hardwood tree in Australia, but not yet a success in America. The timber is easily worked, takes a fine polish, is not attacked by teredo, is almost incombustible, and is used in England for street paving and in Australia for piles, telegraph poles, shingles, etc. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1159.*)

43958. Saccharum officinarum L. Poaceæ. **Sugar cane.**

From Santiago de las Vegas, Cuba. Cuttings presented by Mr. J. T. Crawley, director, Agricultural Experiment Station. Received December 20, 1916.

"*Cristalina.* Noel Deerr in his 'Cane Sugar,' p. 26, says that the *Cristalina* is a Batavian cane and is the lighter of the two purple Batavia canes. It is known in Hawaii as *Rose Bamboo*, in the British West Indies at *White Transparent*, in Cuba as *Cristalina*, and in Louisiana as *Home Purple*. It is of no distinctive color, sometimes being a pale or ash color and at other times wine colored. Its color depends upon its age and environments; the younger the cane the more color it contains, and the younger parts of the cane are more colored than the older parts. It is a comparatively thin cane with long joints and has a longitudinal channel running from the eye to the next joint above. It is prone to fall down from the effects of high winds, is comparatively soft, and when mature furnishes a juice of high sucrose and purity. It is a comparatively hardy cane and will give remunerative crops on soil and under conditions where many other canes would fail. While not immune to the attacks of insects and diseases, it is among the canes which most successfully resist them." (*Crawley.*)

43959 to 43963.

From Canton, China. Obtained by Mr. E. D. Merrill, botanist, Manila Bureau of Science, Manila, Philippine Islands. Received December 26, 1916.

43959 and 43960. Canarium spp. Balsameaceæ.

The following observations relate exclusively to the fruit vended everywhere in the south of Kwangtung Province, of which there are two kinds: The *U-lam*, or "black olive," and the *Pak-lam*, or "white olive," produced, respectively, by *Canarium pimela* and *C. album*.

43959 to 43963—Continued.

Both white and black olives are a good deal grown around Wampoa. Since I have seen none in the immediate neighborhood of Canton nor in Hongkong and their cultivation is therefore apparently local, I can gain no intelligence of their occurrence in a wild state. They are trees 20 to 30 feet high, with a whitish trunk, and a close, round crown of foliage, which in hot sunny days exhale a pleasant balsamic odor, in which respect, as well as in general aspect, they resemble our common walnut. The two species, though perfectly distinct, are singularly alike.

I should remark that, when dried, the leaves of both species have the veinlets prominent, but the network is much closer and finer in those of the "white olive." The "white olive" is either eaten fresh, in which state its strongly resinous flavor renders it disagreeable to the European palate, or is placed when quite ripe in tubs filled with salt, stirred about continually, and after the lapse of a day taken out and dried. In this state it is hawked about in great abundance. It tastes much as the European olive might be expected to do if removed from the brine in which it is kept and allowed to dry, with an appreciable soupçon of turpentine superadded. I have been told it is regarded as a preventive of seasickness. The "black olive" is never eaten raw, but only after having been steeped for a few moments in boiling water. Thus prepared (and packed in jars, with the addition of a little salt, when desired to be preserved) it is of a fine purplish red color, like well-made freshly pickled mango. This fruit is held in much higher esteem than the other, and it is usual to keep a strict watch over it as it ripens, to prevent depredation. I have seen a man who was found luxuriating in the umbrageous coma of a tree to which he could lay no claim, with a basket full of fruit in his possession, tied "spread eagle" fashion to the trunk for nearly a day, the monotony of his durance being varied by periodical flagellations. (Adapted from *Hance*, in *Journal of Botany, British and Foreign, vol. 9, pp. 38, 39.*)

43959. Canarium album (Lour.) DC.

"Canarium fruits are commonly sold in Canton. This species is less expensive than the large one, *C. pimela*. The pericarp is eaten. They are pickled by the Chinese; I have seen them among imported Chinese foodstuffs in Manila." (*Merrill.*)

43960. Canarium pimela Koen.

"This species has a fleshy pericarp which is eaten. The seeds are also said to be edible. They are pickled by the Chinese; I have seen them among imported Chinese foodstuffs in Manila." (*Merrill.*)

43961. Citrus aurantifolia (Christm.) Swingle. Rutaceæ. Lime.

A small tree, with irregular branches, found in all tropical countries, often in a semiwild condition. It has very sharp, short, stiff spines, small, rather pale green leaves, small white flowers, and an oval or round greenish yellow fruit from 1¼ to 2½ inches in diameter, with thin skin and very acid pulp. Large quantities of limes are shipped to the United States from the West Indies for making limeade, and the lime juice is shipped bottled from Montserrat and Dominica in the West Indies. The juice is said to prevent scurvy, and hence is often carried on ships making long voyages. The trees are very sensitive to frost, and they are usually cultivated from seeds. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 782.*)

43959 to 43863—Continued.

43962. CITRUS AURANTIUM L. Rutaceæ. **Sour orange.**

A small tree, native of southeastern Asia, growing 20 to 30 feet high, with sweet-scented flowers and orange-colored or reddish fruit with an acid pulp. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 10.*)

See also S. P. I. No. 41713 for further description.

43963. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Sweet orange.**

A medium-sized tree, widely cultivated in all of the tropical and subtropical regions of the world. It has a rounded top and regular branches, rather small white flowers, and oval or nearly globular fruit, with solid pith, sweet pulp, and membranes which are bitter. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 783.*)

43964 and 43965.

From Manila, Philippine Islands. Seeds presented by Mr. Adn. Hernandez, Director of Agriculture. Received December 29, 1916.

43964. CECROPIA PALMATA Willd. Moraceæ.

Yaruma. A West Indian tree, up to 50 feet in height. At the top of the single, long, thin, weak trunk are a few horizontal or deflected awkward branches bearing large palmate leaves divided like thumbs, with white, hairy lower surfaces. The branches and trunk are hollow, with partitions at the nodes, and ants often make their homes in them. The juice is milky, the flowers are very small, and the fruits are small 1-seeded nuts. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 697.*)

43965. GENIPA AMERICANA L. Rubiaceæ. **Genipap.**

A large stately tree, native of the American Tropics, growing 60 feet in height, with dark-green leaves a foot or more long. The edible fruits are about the size of an orange. (Adapted from the *notes of Messrs. Dorsett and Popenoe, April 13, 1914.*)

See also S. P. I. No. 37833 for further description.

43966 and 43967. FURCRAEA spp. Amaryllidaceæ.

From Rio Hacha, Colombia. Bulbils presented by Mr. M. T. Dawe, Ministerio de Agricultura y Comercio, at the request of Mr. L. H. Dewey, of the Bureau of Plant Industry. Received December 23, 1916.

The species of this genus are succulent desert plants from tropical America. Some of them have spiny leaves like the century plant; others have leaves with very minute serrations on the margins, while many have entirely smooth margins. The flowers are whitish, and as a rule these plants bear fruit only once, after which they die. However, while flowering they produce an immense number of bulbils, which may be used for propagation. The method of propagating is similar to that for century plants, except that Furcraeas requires more heat and water. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1305.*)

43966. "No. 1." **43967.** "No. 2."

43968. Feroniella oblata Swingle. Rutaceæ. **Krassan.**

From Saigon, Cochin China. Presented by Mr. P. Morange, director, Agricultural and Commercial Services. Received December 30, 1916.

For a description, see S. P. I. No. 43566.

43969 to 43979. Cucurbita pepo L. Cucurbitaceæ.

From San Juan Bautista, Tabasco, Mexico. Seeds presented by Mr. G. Itié, director, Agricultural Experiment Station. Received December 16, 1916.

43969. No. 1.
43970. No. 2.
43971. No. 2 bis.
43972. No. 3.
43973. No. 4.
43974. No. 5.
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43976. No. 6 bis.
43977. No. 7.
43978. No. 9.
43979. No. 10.

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Issued January 30, 1922.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1917.

(No. 50; Nos. 43980 to 44445.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1917 (NO. 50; NOS. 43980 TO 44445).

INTRODUCTORY STATEMENT.

When the war broke out it was expected by many that interest in new plants would suffer a serious setback. That the contrary is true is the conviction forced upon the writer from watching the correspondence which passes over his desk. The hunt for substitutes has served to counterbalance in a measure the effect of the curtailment of the funds of amateur and official experimenters, and the spectacle of our dependence upon foreign raw plant materials has been in the nature of a revelation to millions of people. That the world has scattered over it enthusiastic pioneers who see possibilities in plants which are now obscure, this inventory is evidence, for it describes plants sent in by such pioneers during the third year of the war from 41 different foreign countries or separate islands. While the total number for the three months covered is not so great as that during the similar period in 1913, the fact must be taken into account that only two explorers of the office were in the field, viz, Frank N. Meyer, in central China, and Wilson Popenoe, in Guatemala.

Hosts of the plants have been sent in by correspondents, many of them foreigners, who recognize, as we do, that the area of plant culture can not be confined by national boundaries, but is limited only by the natural barriers of soil, climate, and human intelligence. In the world to-day there is no large plant monopoly which depends for its maintenance upon the prohibition of the export of the seeds of the plant on which it is founded. Where the plants can grow to perfection and the requisite human intelligence is present and other economic factors are favorable, there plant industries will be built up and maintained so long as the factors of quality and the cost of production and transportation remain favorable and fashion does not change.

Many of the plants herein recorded are in the nature of gifts to America by foreign countries, and it is with especial pleasure that we acknowledge officially the debt of gratitude, realizing fully that.

many years hence, when the plants shall have developed and become widely grown, this debt may indeed be a very large one.

The more promising of the introductions appear to be the following:

Three selected strains of red clover (*Trifolium pratense*, Nos. 44105 to 44107), presented by the Danish Royal Agricultural Society, two being quite new, the third already in general use in Denmark.

Psychotria bacteriophila (No. 44119), a shrub from the Comoro Islands, Madagascar, producing leaves which harbor nodules of bacteria that gather nitrogen from the air, quite as do the root nodules of the Leguminosæ.

An ash (*Fraxinus potamophila*, Nos. 44132 to 44134), from Chinese Turkestan, sent through the American ambassador by the British consul general at Kashgar. This ash, first introduced by Frank N. Meyer, has proved perfectly hardy at Fallon, Nev., and promises to be a valuable tree on the poor soil of that region.

The famous Pai li and other cultivated large-fruited varieties of the blight-resistant pear (*Pyrus ussuriensis*, Nos. 44145, 44147, 44148, 44150, and 44151) from China, obtained through Mr. Meyer.

A tall-growing, new species of spruce (*Picea meyeri*, No. 44149), found by Mr. Meyer in Shinglungshan, Chihli Province, China, and named by Rehder and Wilson after our explorer.

A collection of cultivated varieties of Chinese pears (Nos. 44163 to 44174 and 44176), containing some of *Pyrus ussuriensis* and others of *P. lindleyi*. These may prove of considerable value in the studies of blight resistance which are now being made by Reimer and others.

An amaranth (*Amaranthus paniculatus*, No. 44178) from Kashmir, where its farinaceous seeds form the staple food of the hill tribes in many parts of India; the plant is known as rájgira.

A species of Calamus (No. 44181), called the litoco, introduced by Mr. Wester, from Kiangan, northern Luzon. This plant bears small, scaly fruits, of subacid, refreshing flavor, resembling the lanzon (Lansium), and with excellent keeping qualities.

Garcinia multiflora (No. 44239), from Kiayingchow, near Swatow, China, a shrub which bears a delicious but small fruit resembling the true mangosteen in flavor. The fact that it has withstood temperatures of 27° F. without injury may indicate that it can be grown outside the Tropics, and its relation to the true mangosteen may make it valuable for breeding purposes.

Seeds of *Bambos tulda* (No. 44240), from Dehra Dun, India. This species has proved so easy of cultivation in Panama and Porto Rico and its timber is so valuable for fishing-rod manufacture that the securing of a considerable quantity of seed is worthy of mention.

Cudrania tricuspidata (No. 44241), from American-grown trees at Augusta, Ga., where the tree seems to be quite at home and bears heavily. Recent information indicates that the silk from silkworms fed upon the leaves of this plant is different from ordinary silk and that lute strings made from it give a clearer tone than those made of silk spun by silkworms fed on the ordinary mulberry leaves. This fact doubtless will be of interest to all those studying the influence of foods upon the secretions of animal bodies. Silk being a typical protein, like the white of eggs or the casein of milk, facts discovered regarding changes in its character might have a bearing upon the studies of the changes in the character of other proteins.

A wild bush tomato (*Lycopersicon esculentum*, No. 44245), with wrinkled fruits, from Panama, where it appears, according to Mr. O. W. Barrett, to be resistant to wilt (*Bacillus solanacearum*).

A collection of Chinese peach varieties (*Amygdalus* spp., Nos. 44253 to 44266) from Kiangsu Province, China, secured through the Rev. Lacy L. Little, of Kiangyin, among them one variety from the famous Lushang Gardens.

In Nairobi, British East Africa, the inner bark of *Strychnos spinosa* (No. 44019) appears to be used successfully as an antidote for snake bites and deserves to be investigated. The fact that this plant grows so successfully in southern Florida, where rattlesnakes and moccasins are frequent, may make the wide distribution which has been made of it a thing well worth while. In any event, it deserves study from this new point of view.

The pepino (*Solanum muricatum*, Nos. 44021 and 44022) appears to be represented in Ecuador by two distinct varieties, one white and the other purple. As this is a fruit of excellent quality, practically seedless, and adapted for salads, it seems a pity that a more thorough test of it has not been made in America. Enough ought to be produced to place it on our markets for several years, for a fruit which has become so popular in the Canary Islands surely has a chance in America.

A new annual legume (*Aeschynomene* sp., No. 44040), for soil fertilization, from Costa Rica, which, though not certainly a forage crop, is reported to have unusual quantities of nitrogen-collecting nodules on its roots.

Sixteen distinct species or hybrids of the genus Pyrus (Nos. 44041 to 44056), from the Arnold Arboretum. These deserve a thorough trial as stocks for the cultivated pear. This is particularly interesting at this time, when the question of shutting out European-grown nursery stock and the creation of a more uniform root system for our orchard trees appear as problems of great importance.

Few shrubs strike the American visitor to England as adding more to the charm of the grounds of small cottages than do the cotoneasters, which are extensively used in dooryards. Many of those used in England are tender here, but certain of the Chinese species (see Nos. 43989 to 43995 and 44077 to 44084) are quite hardy with us, and these deserve the same place in our gardening that the more tender species occupy in England.

It is not often that a plant is introduced from a region so little known as the Falkland Islands, and the climate of these islands of the southern hemisphere may be difficult to approximate in America, but the tussock grass (*Poa flabellata*, No. 44000), which grows in peaty soils near the sea, yields a good forage, and has edible nutty flavored shoots, should be tested carefully.

The tree-tomato (*Cyphomandra betacea*, No. 44064) appears to have become a cultivated fruit plant in British East Africa, and a purple-fruited strain of it found there indicates that something may be done in the selection of this promising species of Solanaceae.

The species of Rollinia (No. 44094), as yet undescribed, collected by Mr. M. T. Dawe, in the lowlands of northern Colombia, is said to bear orange-colored edible fruits. This adds another annonaceous fruit to the collection being assembled for purposes of hybridization and selection at Miami, Fla.

The pacaya palm (*Chamaedorea* sp., No. 44059), cultivated in nearly every garden in Coban, Guatemala, and producing edible inflorescences like ears of corn, deserves to be studied, and if it can be grown in southern Florida or California it should be planted in sufficient quantities to test it thoroughly as a salad-producing plant.

A native grape (*Vitis tiliaefolia*, No. 44060), sold in the city markets of Guatemala, is used extensively for jelly making. It grows luxuriantly in southern Florida and may prove a stock for North American or European grapes.

The soft lumbang tree (*Aleurites trisperma*, No. 44061), producing an oil similar to that of the Chinese tung-oil tree, deserves study on a plantation scale to determine whether it can be grown economically in our tropical territory and can be depended upon to increase the supply of this valuable drying oil, which has trebled in price since the war.

A remarkable collection of pear species and varieties (Nos. 44274 to 44280) made by Mr. Meyer in Chihli Province, China, and including a cultivated variety of *Pyrus ussuriensis* with edible fruits and another pear, possibly a new species, is used for stock by the Chinese horticulturists.

Mangifera caesia (No. 44290), a species related to the mango, may be worthy of trial as a stock, or possibly crosses of it might be useful.

Four varieties of seedling avocados (*Persea americana*, Nos. 44439, 44440, 44444, and 44445) from Guatemala, collected by Wilson Popenoe, include one producing fruits of very unusual size (45 ounces) and good quality, which is at the same time a productive sort.

The manuscript of this inventory has been prepared by Mrs. Ethel M. Kelley, the botanical determinations of seeds introduced have been made and the botanical nomenclature revised by Mr. H. C. Skeels, and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory, as of all the publications of this office.

David Fairchild,
Agricultural Explorer in Charge.

Office of Foreign Seed and Plant Introduction,
Washington, D. C., October 14, 1919.

INVENTORY.[1]

43980. BERBERIS TRIFOLIOLATA Moric. Berberidaceæ. **Barberry.**

From College Station, Tex. Presented by Mr. B. Youngblood, director, Agricultural Experiment Station. Received January 8, 1917.

An evergreen shrub from western Texas, with leaves composed of three to five spiny leaflets, which produces red, aromatic, acid berries, about the size of peas. These berries ripen in May. They are often called "currants," and are used for tarts, jellies, etc. (Adapted from *Coulter, Contributions from the United States National Herbarium, vol. 2, p. 10.*)

"According to Mr. Youngblood's verbal statement, this barberry jelly is being made each year in increasing quantities and is highly prized by all who have tested it. There would appear to be a field for the plant breeder in the development of heavy-fruiting barberries of good flavor with few or no seeds, and it seems remarkable that no one has undertaken the task." (*Fairchild.*)

43981. DAHLIA sp. Asteraceæ. **Tree dahlia.**

From Tactic, Alta Vera Paz, Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received January 10, 1917.

"No. 78. Double white variety. The pink tree dahlia is common throughout a large part of Guatemala. I have seen it from Antigua to Coban, often in great abundance, its huge single pink flowers, 4 inches in diameter, making it a very striking thing. The pink form, which apparently is the typical one, is the only form which I have seen in the southern part of Guatemala, but in the vicinity of Tactic there are three other forms. None of these is so common as the pink form, although all are seen occasionally in gardens. The forms in question are a single white, identical with the typical single pink except in its color, which is pure white; a double pink, of the same lilac-pink shade as the typical form, but with double flowers 3 inches in diameter; and a double white form, of the same character as the double pink, but pure white. The tree dahlia is called *shikar* in the Pokomchi dialect, the language of the Indians at Tactic. It is very commonly planted around gardens and dooryards to form a hedge, large cuttings 3 to 4 feet long and of stems 1 to 2 inches in diameter being inserted in the ground and apparently rooting very readily. The plants grow to 15 feet in height, and when in full bloom, as they are at this season of the year, are a glorious sight. Tactic is made beautiful by this common plant, and it would seem well worth while to test it for hedges in California, where the pink form has already been introduced and is offered in the trade. The variety sent in under this number is the *double white*, which seems to be one of the most beautiful of all. The flowers of this form are extensively used by the Indians of Tactic for decorating the images of saints which they have in their houses and in the churches." (*Popenoe.*)

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[1] Each introduction consists of seeds unless otherwise specified.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received by the Office of Foreign Seed and Plant Introduction; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names in American literature becomes necessary, the designations appearing will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

This is possibly a cultivated form of *Dahlia maxoni* Safford.

43982. Gossypium sp. Malvaceæ. **Cotton.**

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received January 10, 1917.

"Seeds of the native red cotton of Paraguay. This is said to be indigenous." (*Mead.*)

43983 and 43984. Chayota edulis Jacq. Cucurbitaceæ. (*Sechium edule* Swartz.) **Chayote.**

From Rio de Janeiro, Brazil. Presented by Dr. Alberto Löfgren, Botanic Garden. Received January 2, 1917.

43983. "Fruit very small and quite corrugated." (*B. T. Galloway.*)

43984. "Fruit medium sized, considerably corrugated, and spineless; skin thick." (*B. T. Galloway.*)

43985. Castilleja indivisa Engelm. Scrophulariaceæ. **Painted cup.**

Grown at the Plant Introduction Field Station, Chico, Calif., from seed collected at Lyford, Tex., by Dr. David Griffiths, of the Department of Agriculture, May 2, 1915. Plants numbered for convenience in distribution on January 17, 1917.

"One of the most showy of the winter annuals of southern Texas. The seedlings come up very abundantly upon the sandy coastal plain in autumn, developing slowly during the winter but rapidly in early spring, and dominating the color of acres of the landscape in late March and early April. Here its seeds are matured in late April and early May. There are few native plants more showy than this one. This whole group of *painted cups*, however, is considered somewhat difficult to grow and is consequently little handled in the trade in this country, although commonly grown in England. Our efforts have met with both success and failure in their handling. Recent trials indicate that the habits of the plant fit it to stand winter handling and that it can be grown successfully as a winter annual in regions having mild winters with sufficient moisture for seed germination in autumn. It requires a comparatively low temperature for its development. Experience at Chico, Calif., shows that the sudden transition from winter to summer, such as we have, dwarfs the plants before maturity, so that they produce but few of the colored bracts which are so attractive in all of the *painted cups* or *Indian paintbrushes*." (*Griffiths.*)

43986. Carica papaya L. Papayaceæ. **Papaya.**

From St. Leo, Fla. Presented by Father Jerome, St. Leo College. Received January 2, 1917.

"Seed saved from a tree that has endured a temperature of 27° F. and has borne 100 fruits in 12 months from seed. Father Jerome received from Hawaii the seed from which this tree was grown." (*Peter Bisset.*)

43987. Pyrus calleryana Decaisne. Malaceæ. **Pear.**

From Jamaica Plain, Mass. Scions presented by the Arnold Arboretum. Received January 2, 1917.

This wild Chinese pear is not uncommon in western Hupeh at altitudes of 1,000 to 1,500 meters. It is easily recognizable by its comparatively small crenate leaves and small flowers. This pear maintains a vigorous and healthy appearance under the most trying conditions, and might prove to be a very desirable blight-resistant stock. The woolly aphis, which attacks other species of pears, has not been known to touch this species. (Adapted from *Compere, Monthly Bulletin Calif. State Comm. Hort., vol. 4, pp. 313–314,* and from *Rehder, Chinese Species of Pyrus, Proc. Am. Acad., vol. 50, pp. 237–238.*)

43988. Prunus bokhariensis Royle. Amygdalaceæ. **Plum.**

From Seharunpur, India. Cuttings presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens. Received January 4, 1917.

"*Alucha black.*" A plum from Chinese Turkestan, with medium-sized clingstone fruits of fine flavor, which ripen late in July. They are excellent for preserves and jellies. (Adapted from *note of Frank N. Meyer, Jan. 10, 1911.*)

See also S. P. I. No. 40223 for further data.

43989 to 43996.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received January 5, 1917.

43989. Cotoneaster ambigua Rehd. and Wils. Malaceæ.

A shrub from western China, up to 7 feet high, with deciduous, oval-oblong, sharp-pointed leaves up to 2 inches long; five to ten pinkish flowers borne in corymbs; and black globose fruit about one-third of an inch long containing two or three, rarely four or five, stones. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, pp. 160–161.*)

43990. Cotoneaster dielsiana E. Pritz. Malaceæ.

A shrub from western China, up to 6 feet high, with slender spreading and arching branches and deciduous, firm oval leaves about three-quarters of an inch long with yellowish gray lower surfaces. The pinkish flowers are few and short stemmed, and the red fruit, a quarter of an inch in diameter, contains three or four stones. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 866.*)

43991. Cotoneaster divaricata Rehd. and Wils. Malaceæ.

A deciduous upright shrub from central and western China, with shining oval leaves, one-third to three-quarters of an inch long. The pink flowers are usually in threes, and the fruit, which contains only two stones, is one-third of an inch long. It is a very handsome shrub when studded with its bright-red fruits and is hardy at the Arnold Aboretum. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 865.*)

43992. Cotoneaster horizontalis perpusilla C. Schneid. Malaceæ.

A low Chinese shrub of prostrate habit, with almost horizontal branches in two dense series and roundish oval leaves less than one-third of an inch long. The flowers are erect, pink, and either solitary or in pairs;

43989 to 43996—Continued.

and the bright-red oval fruit, a quarter of an inch in diameter, usually contains three stones. One of the most effective fruiting shrubs for rockeries. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 865.*)

43993. Cotoneaster nitens Rehd. and Wils. Malaceæ.

A shrub from western China, up to 4½ feet high, with deciduous, oval, obtuse, shining green leaves up to half an inch or more long; probably pink flowers, and nearly black fruits, either solitary or in pairs, up to one-sixteenth of an inch long, and containing two stones. In its native country it grows at elevations of 7,500 to 10,000 feet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, pp. 156–157.*)

43994. Cotoneaster obscura Rehd. and Wils. Malaceæ.

A shrub from western China, up to 10 feet in height, with elliptic-oval leaves, 1 to 2 inches long. The fruit is dull red, one-third of an inch long, and generally contains three stones. The flowers are white. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 867.*)

43995. Cotoneaster tenuipes Rehd. and Wils. Malaceæ.

A gracefully branched deciduous shrub from western China, up to 7 feet tall, with oval or elliptic-oval sharp-pointed leaves about 1⅝ inches long. The flowers are white; the fruits are nearly black, usually solitary, and contain two stones. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 171.*)

43996. Sorbus pohuashanensis (Hance) Hedl. Malaceæ.

An evergreen shrub from northern China, with reddish brown twigs, leaves composed of six to seven pairs of elliptic or lance-elliptic leaflets from 1⅝ to 2 inches long, and red fruits about one-third of an inch in diameter. This shrub is in cultivation at the Arnold Arboretum. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 672.*)

43997 and 43998.

From Caracas, Venezuela. Collected by Dr. J. N. Rose, associate curator, United States National Museum. Received January 5, 1917.

43997. Fragaria vesca L. Rosaceæ. **Strawberry.**

"Srawberries are found wild in the mountains, but Dr. Ernst declares that they are not native." (*Rose.*)

43998. Psidium guajava L. Myrtaceæ. **Guava.**

"Seeds of a very large guava, the largest I have ever seen. It is 4 inches long and resembles somewhat a large Bartlett pear. It may be known to you, but is new to me. It is called at Caracas the 'Peruvian guava,' but I saw nothing like it in Peru in 1914. It has only recently been introduced into Caracas. I obtained the seeds from Mr. Frederick L. Pantin, acting manager of the Caracas & La Guaira Railroad." (*Rose.*)

43999. BAILEYA MULTIRADIATA Harv. and Gray. Asteraceæ.

From the Santa Rita Mountains, Ariz. Collected by Dr. David Griffiths. Received January 6, 1917.

A very handsome plant, found in the southwestern United States and northern Mexico. It is biennial or perennial, densely woolly, with alternate compound leaves and long-stemmed heads of bright-yellow flowers. It is common on the mesas in the early spring, and sometimes continues flowering until late in the fall. (Adapted from *Wooton and Standley, Flora of New Mexico, p. 718.*)

44000. POA FLABELLATA (Lam.) Hook. f. Poaceæ. **Tussock grass.**

From Stanley, Falkland Islands. Procured from Mr. W. A. Harding, manager, Falkland Islands Co., through Mr. David J. D. Myers, American consul, Punta Arenas, Chile. Received January 8, 1917.

A coarse grass, native of the Falkland Islands, growing on peat soils near the sea. The plant forms dense masses of stems which frequently rise to a height of 4 to 6 feet, and the long, tapering leaves 5 to 8 feet long and an inch wide at the base hang gracefully over in curves. The plant is much relished by cattle; it is very nutritious and contains saccharin. The inner portion of the stem, a little way above the root, is soft and crisp, and flavored like a hazelnut; the inhabitants of the Falkland Islands are very fond of it. They boil the young shoots and eat them like asparagus. (Adapted from *Hogg, Vegetable Kingdom, pp. 823–824.*)

See S. P. I. No. 43564 for previous introduction.

44001 to 44005.

From Los Angeles, Calif. Presented by Mr. P. D. Barnhart. Received January 9, 1917.

44001. CARDIOSPERMUM HIRSUTUM Willd. Sapindaceæ.

Seeds of a creeping or ascending perennial vine, cultivated in southern California, with a densely hairy, grooved stem, deeply dentate leaves with hairy lower surface, small white flowers in axillary racemes, and pointed, hairy fruits, each containing a globular chocolate-brown seed. This plant is useful for covering arbors; it blooms continuously. It came originally from Africa. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 661.*)

44002. DIPLACUS LONGIFLORUS Nutt. Scrophulariaceæ.

Plants of a low subshrubby perennial from California. The opposite, broadly lanceolate leaves are dark green above, and the large flowers, 1½ inches across, are a beautiful pale orange or buff. The showiness and the rare color of the flowers make this plant a most attractive ornamental.

44003. PENTSTEMON CORDIFOLIUS Benth. Scrophulariaceæ. **Beard-tongue.**

Plants of a more or less shrubby climber, with long very leafy branches and short leafy clusters of rich scarlet flowers nearly 2 inches long. The brilliant flowers form a striking contrast to the dark-green foliage.

44001 to 44005—Continued.

44004. Ribes speciosum Pursh. Grossulariaceæ. **Gooseberry.**

Plants of an evergreen California shrub, 3 to 5 feet high, with shining dark-green 3-lobed leaves and drooping clusters of bright-red flowers. In March and early April it forms one of the conspicuous charms of the foothills about Los Angeles.

44005. Zauschneria californica Presl. Onagraceæ. **Balsamea.**

Cuttings of a low perennial herb, found at medium altitudes of the Sierra Nevada mountain range in California, with erect or decumbent stems about a foot high and oblong or narrow alternate leaves. The large scarlet fuchsialike flowers are up to 2 inches long, and the oblong seeds have tufts of hair at the apexes. Among the Spanish element in California this plant is used as a vulnerary. (Adapted from *Jepson, Flora of Western Middle California, p. 327.*)

44006. Pyrus calleryana Decaisne. Malaceæ. **Pear.**

From Hongkong, China. Presented by Mr. W. J. Tutcher, superintendent, Botanical and Forestry Department. Received January 13, 1917.

See S. P. I. No. 43987 for previous introduction and description.

44007 to 44017. Saccharum officinarum L. Poaceæ. **Sugar cane.**

From Santiago de las Vegas, Cuba. Cuttings presented by Mr. J. T. Crawley, director, Agricultural Experiment Station. Received January 15, 1917.

44007. B–604.
44008. B–1753.
44009. B–6308.
44010. B–6450.
44011. B–6204.
44012. D–74.
44013. D–306.
44014. Blanca.
44015. Lucier.
44016. Caledonia.
44017. B–3412.

44018. Amygdalus persica L. Amygdalaceæ. **Peach.**

(*Prunus persica* Stokes.)

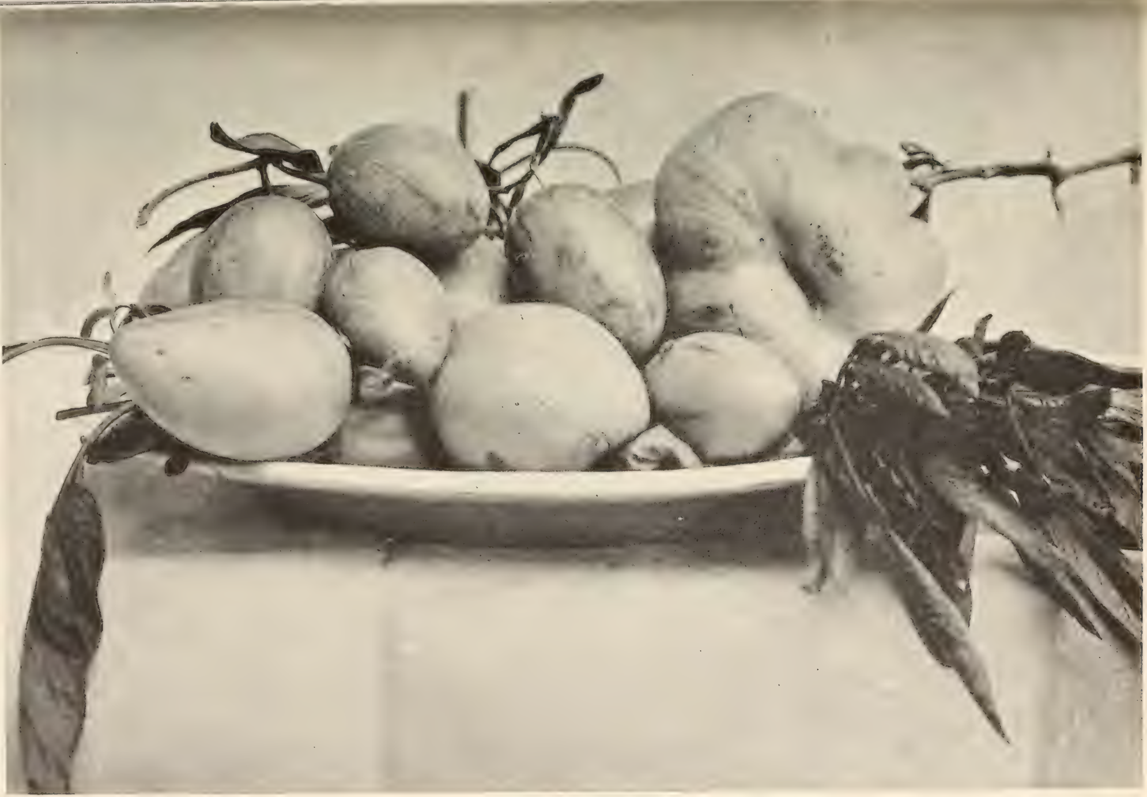
From Tientsin, China. Presented by Mr. Fred. D. Fisher, American consul general. Received January 15, 1917.

"Seeds of common peaches; early season, grown on the banks of the Hai Ho, Tientsin, China." (*Fisher.*)

44019. Strychnos spinosa Lam. Loganiaceæ. **Kafir orange.**

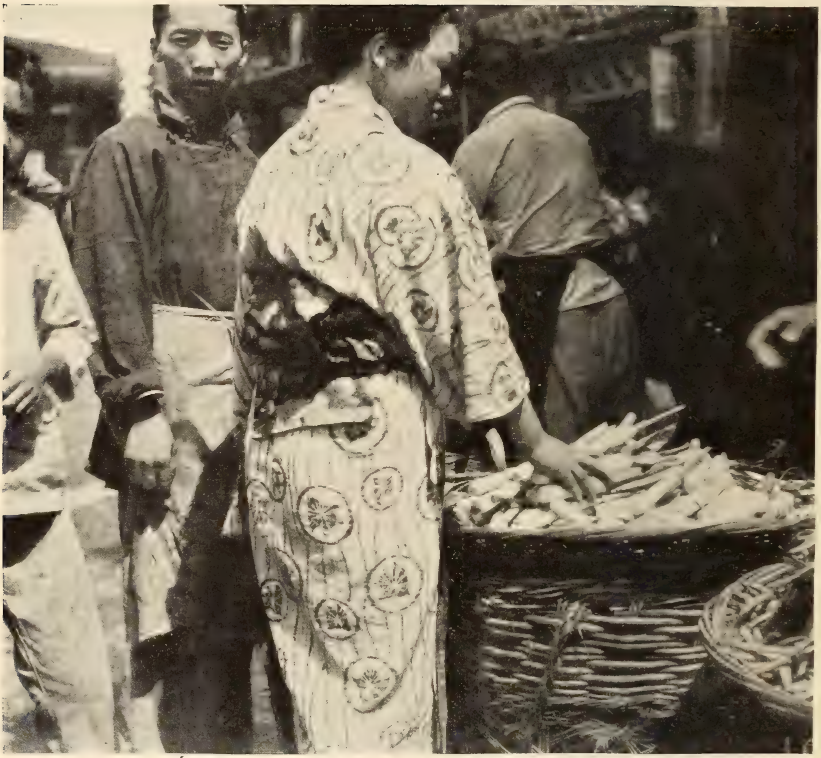
From Nairobi, British East Africa. Presented by Mr. A. C. MacDonald, Director of Agriculture, through Mr. Ralph M. Odell, commercial agent, Bombay, India. Received January 16, 1917.

"A moderate-sized tree of the family Loganiaceæ, which produces fruit very similar to an orange. The shell is hard and contains numerous (upwards of 40) seeds of a flat and somewhat circular outline half an inch or more in diameter. When quite ripe the fruit is juicy, and it is eaten and much liked by the natives. The tree is fairly common at Mazeras and Samburu and is probably distributed in other districts in the surrounding country." (*H. Powell.*)



THE GUATEMALAN PEPINO, A SEEDLESS SALAD FRUIT (SOLANUM MURICATUM, S. P. I. NO. 44021).

Though introduced into California from Guatemala 20 years ago, this relative of the tomato has not become popular, as it has in the Canary Islands. It is doubtful whether it has found its proper niche there, where it can produce as delicate-flavored fruits as it does in the terraced gardens of Grand Canary. Its seedlessness, juiciness, and cucumberlike flavor make it worth serious consideration as an addition to salads. (Photographed by David Fairchild, Grand Canary, near Las Palma, Canary Islands, April, 1903; P9790FS.)



BARGAINING FOR KAU BA IN SHANGHAI (ZIZANIA LATIFOLIA, S. P. I. NO. 44069).

Scene in the Hongkew market. A Japanese girl is bargaining for "water-bamboo" shoots, "kau ba," as they are called locally. These shoots supply a tasteful vegetable when properly prepared. The young shoots of this relative of our own American wild rice are eaten in the late spring when they are swollen by the action of a fungus similar in its effect to corn smut. It is in no way related to the true bamboo. The usual name for this wild rice is ku, and the South China name for the shoots is chiao sun. (Photographed by Frank N. Meyer, June 11, 1915, at Shanghai, China; P12301FS.)

44020. Pyrus sp. Malaceæ. Pear.

From Ningpo, Chekiang, China. Cuttings presented by Mr. L. C. Hylbert. Received January 15, 1917.

44021 and 44022. Solanum muricatum Ait. Solanaceæ. Pepino.

From Ecuador. Presented by Mr. Frederick W. Goding, American consul general, Guayaquil. Received January 17, 1917.

"After persistent search a place near Huigra was found where the plants grew at an altitude of 6,000 feet. As a point of interest I will state that these two varieties are now growing in boxes at this office. One of them has produced flowers, but no fruit as yet." (*Goding.*)

44021. "*Purple* pepino."

44022. "*White* pepino."

For an illustration of the Guatemalan pepino, see Plate I.

44023 to 44028. Saccharum officinarum L. Poaceæ. Sugar cane.

From Cienfuegos, Cuba. Cuttings presented by Mr. R. M. Grey, Harvard Experiment Station. Received January 18, 1917.

"Cuttings. High in sugar, averaging from 19 to 20 per cent sucrose in our hand-mill analyses." (*Grey.*)

44023. [No label.]
44024. Harvard 4068.
44025. Harvard 5082.
44026. Harvard 6047.
44027. Harvard 6065.
44028. Harvard 6159.

44029 to 44035. Saccharum officinarum L. Poaceæ. Sugar cane.

From Cienfuegos, Cuba. Seeds presented by Mr. R. M. Grey, Harvard Experiment Station. Received January 18, 1917.

44029. Harvard 5150.
44030. Harvard 1421.
44031. Harvard 2048.
44032. Harvard 5005.
44033. Harvard 1309.
44034. Harvard 5039.
44035. Harvard 1193.

44036. Carica papaya L. Papayaceæ. Papaya.

From Pago Pago, American Samoa. Presented by Mr. J. M. Poyer, governor, American Samoa. Received January 22, 1917.

"A variety of papaya known here as 'Esi fafine.'" (*Poyer.*)

44037 to 44039.

From Changning, via Swatow, China. Presented by Rev. C. E. Bousfield, American Baptist Mission. Received January 23, 1917.

44037. Chaetochloa italica (L.) Scribn. Poaceæ. Common millet.
(*Setaria italica* Beauv.)

Millet is cultivated extensively as a food plant in Asia, though it is raised only for fodder in America.

44037 to 44039—Continued.

44038. Eleusine coracana (L.) Gaertn. Poaceæ. **African millet.**

A grass closely related to and much resembling goose-grass (*Eleusine indica*), often cultivated as an ornamental.

44039. Holcus sorghum L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

Apparently a nonsaccharine or forage variety.

44040. Aeschynomene sp. Fabaceæ.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received January 17, 1917.

"*Yellow sensitiva.* A very dense-growing leguminous annual, whose roots are almost completely covered with nodules. People say that it is a good forage plant, but I have never seen cattle eat it. Our best plant for nitrification of the soil." (*Wercklé.*)

44041 to 44056. Pyrus spp. Malaceæ. **Pear.**

From Jamaica Plain, Mass. Cuttings presented by the Arnold Arboretum. Received January 25, 1917.

4041. Pyrus amygdaliformis Vill.

A small tree, native of southern Europe, occasionally 20 feet or more high, or sometimes merely a large, rounded shrub. The leaves, which are variable in shape and size, are from 1½ to 2½ inches in length; the white flowers, 1 inch wide, are produced in April in corymbs; and the round, yellowish brown fruits are about an inch in diameter. The chief merit of this tree is its picturesqueness in age. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 273.*)

44042. Pyrus betulaefolia Bunge.

A slender, fast-growing, graceful tree from northern China, attaining a height of 20 to 30 feet, with the young shoots thickly covered with a persistent gray felt. The dark-green oval or roundish, dentate, long-pointed leaves are 2 to 3 inches long; the white flowers, three-quarters of an inch wide, occur eight to ten in corymbs; and the grayish brown roundish fruits are about the size of a pea. The Chinese use this as a stock on which to graft fruiting pears. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 279.*)

44043. Pyrus bretschneideri Rehder.

A medium-sized Chinese tree, with sharp-pointed serrate leaves 2 to 4 inches long, white flowers about three-quarters of an inch wide occurring seven to ten in racemes, and nearly globular yellow fruits up to 1⅕ inches long. It is possible that the native name *Pai-li* may include this species. (Adapted from *Rehder, Proceedings of the American Academy of Arts and Sciences, vol. 50, p. 231.*)

44044. Pyrus calleryana Decaisne.

See S. P. I. No. 43987 for previous introduction and description.

44045. Pyrus phaeocarpa globosa Rehder.

A medium-sized Chinese tree with ovate, round-based, deep-green leaves; unusually large, white flowers; and globular brown or russet slender-stalked fruits. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2780.*)

44041 to 44056—Continued.

44046. PYRUS HETEROPHYLLA Regel and Schmalh.

A small tree, ultimately 20 to 30 feet high, native of Eastern Turkestan, with exceedingly variable leaves of two extreme types, either oval and 2 to 3½ inches long, or cut back to the midrib into three to seven narrow lobes, which are three-quarters of an inch to 2 inches long. The white flowers, three-quarters to an inch wide, are produced in small clusters, and the fruit is like an ordinary small pear. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 284–285.*)

44047. PYRUS KORSHINSKYI Litv.

A tree native of Bokhara, Turkestan, 20 feet or more in height, or sometimes a shrub, with coriaceous lance-shaped or ovate-oblong, coarsely crenate leaves about 3 inches long, and nearly globose stout-stalked fruits almost an inch in diameter, crowned by a persistent calyx. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2868.*)

44048. × PYRUS MALIFOLIA Spach.

A hybrid of unknown parentage, originally grown in Paris in 1834, where it formed a tree more than 30 feet high with a rounded bushy head. The leaves are oval or roundish, about 3 inches wide, occurring in few-flowered corymbs. The deep-yellow fruit is turbinate and about 2 inches long and wide. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 286–287.*)

44049. × PYRUS MICHAUXII Bosc.

A small tree, probably native of the Levant, and said to be a hybrid between *Pyrus amygdaliformis* and *P. nivalis*. It has entire oval or oval-oblong, shining leaves up to 3 inches long, white flowers in very short corymbs, and globular or turbinate greenish yellow fruits. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 288.*)

44050. × PYRUS OBLONGIFOLIA Spach.

A small tree, occasionally 20 feet or more high, said to be a hybrid between *Pyrus amygdaliformis* and *P. nivalis*, and common in Provence, France. The leaves are oval or oblong, and the fruits, which are yellowish, tinged with red on the sunny side, are about 1½ inches in diameter. In Provence it is known as the *Gros Perrussier*. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2. p. 273*, under *P. amygdaliformis oblongifolia.*)

44051. PYRUS USSURIENSIS OVOIDEA Rehder.

A Chinese tree of pyramidal habit, 30 to 50 feet high, with oval-oblong sharply serrate leaves, 3 to 5 inches long; white flowers in five to seven flowered racemes; yellow, juicy, somewhat astringent, exactly egg-shaped fruits, up to 1¾ inches long. In autumn the foliage turns a bright scarlet, and the flowers appear a week ahead of the other species of pears. (Adapted from *Rehder, Proceedings of the American Academy of Arts and Sciences, vol. 50, pp. 228–229*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2869.*)

44052. PYRUS PASHIA Buch.-Ham.

A usually spiny tree from western China and the Himalayas, with leaves when young three lobed and doubly serrate, becoming glabrous with age. The flowers, an inch wide, are mostly in woolly corymbose

44041 to 44056—Continued.

clusters, and the brown fruits are globose and an inch in diameter. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2870.*)

Received as *Pyrus variolosa*, which is generally referred to *P. pashia.*

44053. PYRUS SALICIFOLIA Pall.

Var. *pendula* Hort. A very elegant tree, native of southeastern Europe and Asia Minor, from 15 to 25 feet high, with pendulous branches, narrow lance-shaped shiny green leaves 1½ to 3½ inches long, pure-white flowers three-quarters of an inch wide in small dense corymbs, and pear-shaped fruits 1 to 1¼ inches long. The leaves and flowers of this very ornamental pear often open simultaneously, producing a charming effect. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 292–293.*)

44054. PYRUS SEROTINA Rehder.

A tree native of central and western China, 20 to 30 feet high, with oval-oblong sharply serrate leaves 3 to 5 inches long, six to nine white flowers in each raceme, and nearly globular, brown fruits with slender stalks. This species or one of its forms has been recommended on the Pacific coast as a more or less blight-resistant stock for the European types. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, pp. 2868–2869.*)

44055. PYRUS SERRULATA Rehder.

A tree native of western China, 22 to 25 feet high, with oval or oval-oblong serrulate leaves up to 4½ inches long, six to ten white flowers in each umbellate raceme, and nearly globular brown fruits about three-fifths of an inch long. (Adapted from *Rehder, Proceedings of the American Academy of Arts and Sciences, vol. 50, pp. 234–235.*)

44056. PYRUS USSURIENSIS Maxim.

A tree native of Amur and Ussuri, Siberia, from 20 to 30 feet high, with broadly oval, sharply serrate, acuminate leaves, many-flowered racemes of white flowers, and roundish oval, umbilicate, mild-flavored fruits over an inch in diameter, crowned by a persistent calyx. In autumn the foliage turns a shining brownish red, making the tree very ornamental. (Adapted from *E. Regel, in Gartenflora, vol. 10, pp. 374–375.*)

44057 and 44058. VICIA FABA L. Fabaceæ. **Broad bean.**

From Tiflis, Caucasus, Russia. Presented by the chief specialist, Plant Breeding Department, Tiflis Botanic Garden. Received January 2, 1917.

44057. Beans nearly circular in outline and of a dark reddish brown color.

44058. Beans approximately oblong and of a much lighter color.

44059 and 44060.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received January 12, 1917.

44059. CHAMAEDOREA sp. Phœnicaceæ. **Pacaya palm.**

"(No. 79a. *Pacaya* palm from Coban, December 13, 1916.) Nearly every garden in Coban contains a number of these small, attractive palms, planted not so much for ornament as for the edible inflorescences

44059 and 44060—Continued.

which they produce. In other parts of Alta Vera Paz the pacaya is also quite common, and it is grown in the southern part of Guatemala as well. Since it succeeds here at elevations of 5,000 feet or even higher, where the winters are quite cool, it would seem that it ought to be a success in southern California and Florida, though it is difficult to predict what effect the sandy soil of the latter State may have upon it. The palm grows to a height of 15 feet, having a slender stem about 2 inches in diameter and handsome leaves, somewhat reminding one of *Chrysalidocarpus lutescens* (*Areca lutescens*). The foliage is of a rich-green color. The inflorescences are produced along the trunk in the winter and spring, and apparently more or less throughout the year. Before the spathe has opened it is removed from the palm opened, and the tender inflorescence, nearly white in color and finely branched, is removed and eaten. Its preparation for the table consists in dipping it in a batter made of eggs and then frying it; in enveloping it in an omelet; in boiling it and serving it as a vegetable; or in mixing it with other vegetables to form a salad. When very young and tender its flavor is agreeable, but when older and nearly ready to emerge from the spathe it has a strongly bitter taste, which makes it disagreeable. It should therefore be used when quite young. The pacaya palm grows in a variety of soils, seeming to do well on clay and also on black sandy loam. An abundance of lime in the soil does not seem to injure it. It is frequently planted in gardens among coffee bushes, and in many sections it is planted beneath large trees, where it has partial shade. I have seen many beneath large avocado trees, interplanted with coffee bushes. It may be necessary to furnish shade for the palms in California and Florida by means of a slat house or some such device, or they might be planted beneath large trees, as they are in Guatemala. The pacaya as an article of food is extensively used in Guatemala and by local standards commands a good price, single inflorescences usually selling at two to five for a peso (2½ cents). The spathes are pulled from the palms, tied together in small bundles, and thus brought to market." (*Popenoe.*)

44060. VITIS TILIAEFOLIA Humb. and Bonpl. Vitaceæ. **Grape.**
(*V. caribaea* DC.)

"(No. 81a. Guatemala, Guatemala, December 29, 1916.) A native grape sold in the markets of Guatemala. The bunches are about the size of those of *Vitis caribaea* and the berries very similar; it may, in fact, be this species, though I do not know whether or not *V. caribaea* occurs in Guatemala. The fruit is used to make jelly. For trial in southern Florida in connection with the work of producing a grape adapted to tropical and subtropical conditions." (*Popenoe.*)

44061. ALEURITES TRISPERMA Blanco. Euphorbiaceæ.
Soft lumbang.

From the Philippine Islands. Presented by Mr. A. W. Prautch, through Mr. Adn. Hernandez, director, Manila Bureau of Agriculture. Received January 22, 1917.

"Mr. Prautch has returned from his trip to Cavite Province with seeds and leaves of *Aleurites trisperma*. The nuts were picked up under the trees, where they had been lying since last August, in which month the tree fruits. As you have already successfully introduced *Aleurites moluccana* in the United States, it is quite possible that *A. trisperma* will also be successful. It is believed that the soft-shelled kind (*A. trisperma*) is superior, for in addition to the nut being easier to crack, the Bureau of Science has found that the oil so closely approximates the Chinese tung oil as to be practically indistinguishable therefrom. There is a slight difference between this oil and that of *A. moluccana.*" (*Hernandez.*)

44062. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**

(*T. vulgare* Vill.)

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received January 22, 1917.

"Grown on the slope of Mount Fuji." (*S. Iida.*)

44063. AVENA SATIVA L. Poaceæ. **Oats.**

From Paris, France. Presented by Messrs. Vilmorin-Andrieux & Co. Received January 30, 1917.

"Very early black hybrid." (*Vilmorin-Andrieux & Co.*)

44064 and 44065.

From Londiani, Kenia. Presented by Mr. J. H. Cameron, Londiani Farms (Ltd.). Received January 30, 1917.

44064. CYPHOMANDRA BETACEA (Cav.) Sendt. Solanaceæ. **Tree-tomato.**

"This seed grows in my garden; it is a cultivated plant, but I do not know where it comes from; it is in every garden hereabouts. We call it the *Cape tomato*, but it is not a tomato, nor do I suppose that it ever saw the Cape, i. e., the Cape of Good Hope. The early settlers in this country mostly came up from the Cape after the South African war, and got into the habit of calling everything they saw after something else that they knew in South Africa. It is a tree growing up to 10 feet high, with large glossy green and purple leaves. The fruit is exactly like an English plum, both in size and appearance (an average one I have here on my desk, plucked at random, measures 2½ inches in length and 6 inches in circumference); the skin is purple and the flesh a bright yellow; like *Physalis peruviana* it can be eaten raw, stewed, made into jam, or, as you say in America, preserves, and used in making pies. It does not grow wild here and must have been brought from some other country, probably by missionaries." (*Cameron.*)

44065. PHYSALIS PERUVIANA L. Solanaceæ. **Poha.**

"Seeds of an economic plant which we call the *Cape gooseberry*. A yellow-colored fruit about the size of a large cultivated cherry, but round and not oval like a real gooseberry. It is a most excellent fruit to eat either raw or stewed, and it can be eaten with cream, in pies, or preserved. It is very prolific, rather in danger of becoming a weed and running away with the garden, but not any more so than your own raspberry or blackberry. As to habitat, I find it growing as low as 6,000 feet above the level of the sea, which is low for East Africa. Here at Londiani it is very plentiful. We are 8,000 feet above sea level. It grows in cultivated gardens and also wild by the roadside and in wild bushy places. I was astonished on one occasion to find it growing most profusely away up on the top of Mount Londiani at 10,000 feet above

44064 and 44065—Continued.

sea level, on which occasion I may say it about saved my life. I had ridden up there at dawn for the purpose of shooting buffalo, which I did, and then lost my guides in a great bamboo forest and wandered about for many hours; I finally came to an open place and found many of these plants growing, and being very hungry I devoured many of the fruits. I found them both meat and drink." (*Cameron.*)

44066. COLOCASIA ESCULENTA (L.) Schott. Araceæ. **Taro.**

From Oilla, Tex. Tubers presented by Mr. S. Kato. Received January 24, 1917.

"*Yatsu-gashira-imo.* A Japanese variety of taro of the dasheen type. It is said to be the best variety grown in Japan. These specimens grown in Texas, though very small, were mealy and of fine flavor." (*R. A. Young.*)

44067. VICIA FABA L. Fabaceæ. **Broad bean.**

From Amsterdam, Netherlands. Procured through Mr. Frank W. Mahin, American consul. Received January 23, 1917.

"Seeds of the broad bean, called by the Dutch *Duivenboon.*" (*Mahin.*)

44068. DIOSPYROS KAKI L. f. Diospyraceæ. **Kaki.**

From Hangchow, China. Presented by Dr. D. Duncan Main. Numbered February 5, 1917.

A variety sent in without description.

44069. ZIZANIA LATIFOLIA (Griseb.) Stapf. Poaceæ. **Wild rice.**

From China. Plants collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received January 3, 1917.

"(No. 1261. Peking, China, November 20, 1916.) A Chinese wild rice, cultivated in standing water. The young sprouts are eaten in the spring, while later on the shoots, swollen through the action of a fungus, are eaten in much the same way as bamboo. Chinese name *chiao pai.*" (*Meyer.*)

For an illustration of the shoots of wild rice, known as kau ba, used as a vegetable, see Plate II.

44070 and 44071.

From Wellington Point, near Brisbane, Queensland, Australia. Presented by Mr. James Pink. Received January 22, 1917.

44070. CARICA PAPAYA L. Papayaceæ. Papaya.

"Seeds of a good variety of papaw, grown from seed of my own selection." (*Pink.*)

44071. CASSIA EREMOPHILA A. Cunn. Cæsalpiniaceæ.

"A very handsome flowering shrub." (*Pink.*)

A woody plant, found in Australia in all the colonies except Tasmania. The leaves are composed of two pairs of very narrow leaflets, and the pods are very smooth. In Australia both the pods and the leaves of this plant are eaten by stock. (Adapted from *Maiden, Useful Native Plants of Australia, p. 121*, and from *Vogel, Synopsis Generis Cassiae, p. 47*, as *Cassia nemophila.*)

44072. SIDEROXYLON AUSTRALE (R. Br.) Benth. and Hook. Sapotaceæ.

From Brisbane, Australia. Presented by Mr. J. F. Bailey, director, Botanic Gardens. Received January 22, 1917.

A tree, sometimes attaining a large size, from southeastern Australia. The leaves, which are quite variable in shape, are mostly 3 to 4 inches long, and the flowers occur in axillary clusters. The purplish, nearly round fruits are 2 inches in diameter and are of a coarse, insipid flavor. The wood is dark colored, close grained, prettily veined, and is used for cabinetwork, carving, etc., but requires careful seasoning. (Adapted from *Maiden, Useful Native Plants of Australia, pp. 367–368*, as *Achras australis*, and from *Bailey, Queensland Flora, p. 958.*)

44073 to 44075.

From Ceylon. Presented by Father Jerome, St. Leo College, St. Leo, Fla. Received January 22, 1917.

44073. DEGUELIA DALBERGIODES (Baker) Taub. Fabaceæ.
(*Derris dalbergioides* Baker.)

A small, spreading tree, 15 to 20 feet high, found in the Malay Archipelago and Java. The branchlets are brown-silky, the dark green, compound leaves are 6 to 8 inches long; the rose-colored flowers are in numerous short-stalked racemes; and the thin, flat pods are up to 2½ inches long. (Adapted from *Hooker, Flora of British India, vol. 2, p. 241.*)

44074. LAGERSTROEMIA SPECIOSA (Muenchh.) Pers. Lythraceæ.
(*L. flos-reginae* Retz.)

A tree, 50 to 60 feet in height, with leaves from 4 to 8 inches long and large panicles of flowers, which vary from rose to purple, changing color during the day. This is the chief timber tree in Assam, eastern Bengal, India, and also in Burma. It occurs along river banks and on low swampy ground and is commonly cultivated as an avenue tree. No special care is used in growing this tree, which is felled when from 30 to 50 years of age. The timber is used for shipbuilding, boats, etc., being very durable under water. It has been introduced into southern California. (Adapted from *Watt, Commercial Products of India, p. 701*, and from *Bailey, Standard Cyclopedia of Horticulture, p. 1775.*)

44075. RHUS RUFA Teijsm. and Binn. Anacardiaceæ.

An erect, smooth-barked tree, native of the peninsula of Menado, island of Celebes, and Dutch East Indies, with leaves composed of 12 to 14 pairs of oblong lance-shaped leaflets, with reddish hairy lower surfaces, and axillary and terminal panicles of white sessile flowers. The fruits are black, dry, nearly globular drupes containing kidney-shaped seeds. The inhabitants of Menado call this *Kajoe-Kambling.* (Adapted from *J. E. Teijsman and S. Binnenendijk, Natuurkundig Tijdschrift voor Nederlandsch Indië, vol. 27, p. 52.*)

44076 to 44084.

From Jamaica Plain, Mass. Cuttings presented by the Arnold Arboretum. Received January 22, 1917.

44076. CALLICARPA GIRALDIANA Hesse. Verbenaceæ.

An ornamental shrub from western China, with dentate leaves 2 to 4 inches long, dense cymes of pink flowers on hairy stalks, and violet fruits.

44076 to 44084—Continued.

If sheltered this shrub will grow in the northern parts of the United States, and if killed to the ground young shoots will spring up vigorously, producing flowers and fruits in the same season. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 629*, as *C. giraldii*.)

44077. Cotoneaster ambigua Rehd. and Wils. Malaceæ.

See S. P. I. No. 43989 for previous introduction and description.

44078. Cotoneaster gracilis Rehd. and Wils. Malaceæ.

A shrub from western China, where it is found at altitudes of from 5,000 to 10,000 feet. It attains a height of 4 to 10 feet and has light-green leaves up to four-fifths of an inch long. The rose-colored flowers occur in lax 3-flowered corymbs and the immature fruits are about one-fifth of an inch long. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, pp. 167–168*.)

44079. Cotoneaster hupehensis Rehd. and Wils. Malaceæ.

A shrub native of central and western China, up to 5 feet in height, with slender spreading branches, oval or elliptic leaves with gray wool on the lower surfaces, 6 to 12 white flowers in each of the numerous cymes, and red, nearly globular fruits about one-third of an inch in diameter. This is one of the handsomest of cotoneasters in bloom, and is hardy as far north as Massachusetts. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 867*.)

44080. Cotoneaster nitens Rehd. and Wils. Malaceæ.

See S. P. I. No. 43993 for previous introduction and description.

44081. Cotoneaster obscura Rehd. and Wils. Malaceæ.

See S. P. I. No. 43994 for previous introduction and description.

44082. Cotoneaster racemiflora meyeri Zabel. Malaceæ.

A low, rather rough shrub from northern Africa and western Asia, with roundish blunt leaves, slightly hairy on the upper surfaces, short-stalked cymes of white flowers, and red fruits. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 754, as C. racemiflora nummularia*.)

44083. Cotoneaster racemiflora soongorica (Reg. and Herd.) C. Schneid. Malaceæ.

An erect shrub, up to 4 feet in height, but rarely prostrate. The leaves are oval and usually somewhat obtuse, and the white flowers occur 3 to 12 in short-peduncled cymes. The fruit is red. This variety is found in northern China, Caucasia, etc. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 867*, and from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 754*.)

44084. Cotoneaster tenuipes Rehd. and Wils. Malaceæ.

See S. P. I. No. 43995 for previous introduction and description.

44085. Garcinia dioica Blume. Clusiaceæ.

From Lawang, Java. Presented by Mr. M. Buysman. Received January 23, 1917.

"The fruit of this tree is eaten." (*Buysman.*)

A Javanese tree up to 60 feet high, with membranous, lance-shaped, sharp-pointed leaves up to 5 inches long, pink flowers in few-flowered axillary or terminal clusters, and nearly globular fruits up to $1\frac{3}{8}$ inches in greatest diameter.

The natives of Java call this tree *tieuri* and *kemedjing*. The wood is of little use, but in some portions the fruits are sought for the sake of the taste of the seed coats. (Adapted from *Koorders and Valeton, Boomsorten op Java. Bijdrage No. 9, pp. 369–372.*)

44086. Campomanesia fenzliana (Berg) Glaziou. Myrtaceæ.

From Parana, Brazil. Presented by Mr. B. H. Hunnicutt, Lavras, Minas Geraes, Brazil. Received January 25, 1917.

Guabiroba. A small Brazilian myrtaceous tree with foliage resembling that of the European oaks. It reaches a height of 30 to 35 feet and bears orange-yellow fruits, up to an inch in diameter, with edible pulp resembling that of the guava. (Adapted from *note of Dorsett, Shamel, and Popenoe, April 13, 1914.*)

See also S. P. I. No. 37834 for further description.

44087 to 44091.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, Lamao Experiment Station, through Mr. Adn. Hernandez, director, Bureau of Agriculture, Manila. Received January 22, 1917.

44087. Citrus excelsa Wester. Rutaceæ. **Limon real.**

A tall, thorny Philippine shrub of vigorous growth and straggly habit, with thick, leathery leaves and thin-skinned smooth fruits up to 3 inches in diameter, with very juicy, mildly acid pulp. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 22.*)

See also S. P. I. No. 41714 for further description.

44088. Citrus medica nana Wester. Rutaceæ. **Dwarf citron.**

A small thorny shrub, rather common in the Philippines, rarely exceeding 2 meters in height, being probably the smallest species in the genus. It has small, sharp spines; narrowly oblong, serrate leaves 7 to 11 cm. long; axillary or terminal, rather loose cymes of white flowers with slight purple tinges on the outside; and roundish egg-shaped, smooth, yellow fruits 2½ inches or more long, with grayish to greenish, acid, rather dry pulp containing many small flattened, smooth seeds. The Filipinos eat the fruit, but it is too dry to be cultivated for the flesh, and the skin is too thin to be used as citron peel. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 19.*)

See also S. P. I. No. 39581 for further description.

44089. Citrus medica odorata Wester. Rutaceæ.

Tihi-tihi. A small, thorny Philippine shrub about 8 feet in height, with rather thick, serrate leaves, white flowers, and fruits up to 4 inches in diameter, with somewhat dry, sharply acid pulp. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 18.*)

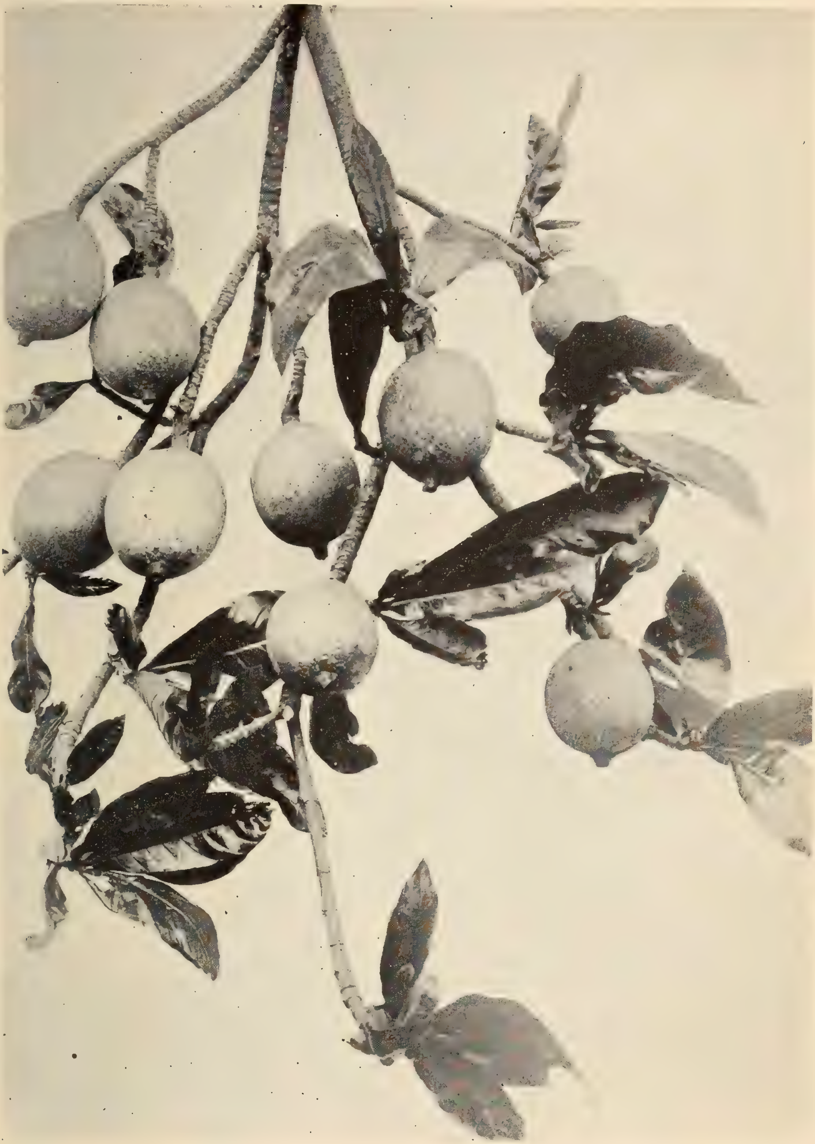
See also S. P. I. No. 41717 for further description.

44090. Genipa americana L. Rubiaceæ. **Genipa.**

A large stately tree, native of the American Tropics, growing 60 feet in height, with dark-green leaves a foot or more long. The edible fruits are about the size of an orange. (Adapted from *note of Dorsett and Popenoe, April 13, 1914.*)

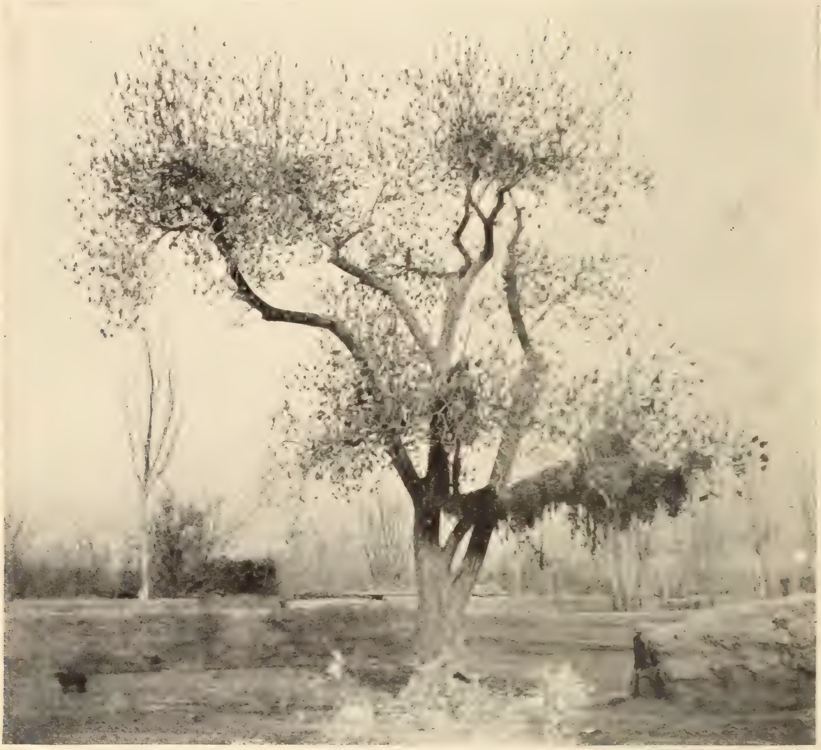
See also S. P. I. No. 37833 for further description.

For an illustration of the Brazilian genipa, see Plate III.



THE BRAZILIAN GENIPA (GENIPA AMERICANA, S. P. I. No. 44090).

Outside of its native region this fruit is little known. In eastern Brazil it is commonly used, and it is also grown in the West Indies. The russet fruits, sometimes nearly 4 inches long, have the flavor of the quince. The tree can be grown only in regions free from severe frosts. See also S. P. I. No. 34882. (Photographed by P. H. Dorsett, Bahia, Brazil, November 12, 1913; P25009FS.)



THE IMODON ASH OF TURKESTAN (FRAXINUS POTAMOPHILA, S. P. I. No. 44132).

During his expedition to Chinese Turkestan, Mr. Meyer took the photograph reproduced above at Khanaka and obtained some of the seeds shown hanging on the tree. This species of ash, under the trying conditions of great drought, intense heat, and soil alkali of that region, made a valuable shade tree. Under S. P. I. No. 30652; the trees grown from these seeds were distributed in 1912. In 1915, some young trees were growing at the Fallon Field Station in Nevada. These promised so much for that treeless region that, through the kindness of the British vice consul, Mr. George MacCartney, more seeds (S. P. I. No. 44132) were imported, with which to make a wide distribution. (Photographed by Frank N. Meyer, Khanaka, Chinese Turkestan, December 5, 1910; P5647FS.)

44087 to 44091—Continued.

44901. UVARIA RUFA (Dunal) DC. Annonaceæ.

Banauac. A much-branched shrub from Java with a stem about the diameter of a man's arm; alternate, elliptic-oblong, acute or obtuse leaves $2\frac{1}{2}$ to 5 inches long; and purplish red, solitary flowers about an inch wide. The oblong, kidney-shaped, red fruits about $1\frac{1}{2}$ inches long, in bunches of 18 or 20, contain whitish, scant, juicy, aromatic, subacid flesh without a trace of sugar and containing many seeds. (Adapted from *Blume, Flora Java, Annonaceæ, pp. 19–20, pl. 4*, and from the Philippine Agricultural Review, vol. 6, no. 7, p. 321.)

44092. LAUROCERASUS ACUMINATA (Wall.) Roemer. Amygdalaceæ. (*Prunus acuminata* Hook. f.)

From Darjiling, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. Received January 29, 1917.

"Freshly gathered seed." (*Cave.*)

A tree 30 to 40 feet high, found in the temperate portions of the central and eastern Himalayas at elevations of from 4,000 to 7,000 feet. The slender branches are covered with flat, smooth leaves 4 to 7 inches long and bear yellowish white flowers a quarter to one-third of an inch wide in many-flowered racemes. (Adapted from *Hooker, Flora of British India, vol. 2, p. 317.*)

See also S. P. I. No. 41813 for previous introduction.

44093. EUCHLAENA MEXICANA Schrad. Poaceæ. **Teosinte.**

From Zomba, Nyasaland. Presented by Mr. J. Stewart J. McCall, Director of Agriculture. Received January 30, 1917.

"Out in Nyasaland I find this a most valuable forage plant, either when fed green to cattle or as hay. I consider it to be the best yielding forage plant I have yet experimented with, and I believe it worthy of special attention in warm districts." (*McCall.*)

44094. ROLLINIA sp. Annonaceæ.

From Bogota, Colombia. Presented by Mr. M. T. Dawe, Director of Agriculture and Agricultural Adviser to the Government. Received February 2, 1917.

"A shrub of the tropical parts of the Department of Magdalena, which affords an edible orange-colored fruit; the flesh is also of orange color." (*Dawe.*)

44095. ALEURITES FORDII Hemsl. Euphorbiaceæ. **Tung-oil tree.**

Plants grown at the plant-introduction field stations from seed received from various sources. Numbered for convenience in distribution in 1917.

Plants grown under Yarrow Nos. 2157, 2158, 2159, 3522, and Chico No. 16151.

44096 to 44098.

From Amoy, China. Presented by Mr. H. Hoyle Sink, American consul. Received January 11, 1917.

44096. ANDROPOGON INTERMEDIUS R. Br. Poaceæ. Grass.

An erect grass, with rather narrow leaves and slender spikes, growing in large clumps 2 feet or more in height. It is a native of Australia,

44096 to 44098—Continued.

where it is used as a forage grass. It is readily propagated from the roots. (Adapted from *Bentham and Mueller, Flora Australiensis, pp. 531–532,* and from the *Agricultural Gazette, New South Wales, May 2, 1914.*)

44097. Arthraxon breviaristatus Hack. Poaceæ. **Grass.**

A tall, graceful grass found in eastern India and China, with culms 50 to 60 cm. high and leaf blades up to 2 inches in length by half an inch in width. (Adapted from *DeCandolle, Monographia Phanerogamarum, vol. 6, pp. 350–351, 1889.*)

44098. Capriola dactylon (L.) Kuntze. Poaceæ. **Bermuda grass.**
(*Cynodon dactylon* Pers.)

A pasture and lawn grass for the Southern States; a rather variable species.

44099. Saccharum officinarum L. Poaceæ. **Sugar cane.**

From Cienfuegos, Cuba. Presented by Mr. Robert M. Grey, Harvard Experiment Station. Received February 3, 1917.

"Harvard No. 6301. Seeds of one of my hybrid canes, which is very prolific and germinates freely when sown in the open ground here." (*Grey.*)

44100. Canarium ambionense Hochr. Balsameaceæ.

From Buitenzorg, Java. Presented by the director, Jardin Botanique. Received February 3, 1917.

This beautiful tree, which grows to a height of about 90 feet, so resembles *Canarium moluccanum* in general habit and in the leaves that the two can scarcely be distinguished, although the fruit is different. The bark is smooth and white. The fruit of this species is oblong, pointed at both ends, with the angles sharp toward the ends and somewhat flattened toward the middle. This tree is found in the island of Amboina, Celebes. (Adapted from *Hochreutiner, Plantae Bogoriensis Exsiccatae, p. 55.*)

"The seeds are eaten as a table nut, and an emulsion of the oil extracted from the seed is considered an excellent baby food." (*Fairchild.*)

44101. Canarium ovatum Engl. Balsameaceæ. **Pili nut.**

From Camarines, Philippine Islands. Presented by Dr. E. B. Copeland, dean, College of Agriculture, Los Banos, P. I. Received February 8, 1917.

A tree, native of the Philippines, with compound leaves and triangular drupes containing one seed. These seeds are eaten throughout the eastern part of the world, and from them is extracted an oil which is used for table purposes and also for burning in lamps. (Adapted from *notes of H. H. Boyle, assistant horticulturist, Manila, P. I.*)

See also S. P. I. No. 38372 for further distribution.

44102. Pyrus communis L. Malaceæ. **Pear.**

From Hamilton City, Calif. Presented by Mr. James Mills. Received January 18, 1917.

"Scions from an old pear tree that was planted by the Mission Fathers about 60 years ago. This tree has not shown any evidence of pear-blight, although blighted trees have been growing in its vicinity." (*Peter Bisset.*)

44103. HELIANTHUS ANGUSTIFOLIUS L. Asteraceæ. Sunflower.

Grown at the Plant Introduction Field Station, Chico, Calif., from seed collected by Dr. David Griffiths. Numbered February 13, 1917.

"This native sunflower is said to occur from New Jersey to Florida and westward to Texas. It attracted the collector's attention in a native condition on the prairies of Arkansas, where it grows most luxuriantly. There are several characteristics which adapt it to ornamental uses: The general habit of the plant is pleasing; it has a small flower with long, graceful rays; the foliage is narrow, long, drooping, and glossy; the main steam and each of its branches are long, graceful peduncles; but, best of all, it will cut and come up again and is perennial in habit. These characteristics make this plant valuable for tall massing effects, like the cosmos, as well as for cutting purposes. The seed distributed this season is from a single variety of this very variable and widely distributed species. Many other forms exist, and doubtless in the hands of horticulturists it will be found capable of much improvement. Some of its varieties are bushy, and all can be pinched back to a bushy form." (*Griffiths.*)

44104. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Honolulu, Hawaii. Cuttings presented by Mr. Donald MacIntyre, Moanalua Gardens. Received February 8, 1917.

"*Moanalua.* A chance seedling 19 years of age growing on the estate of Hon. S. M. Damon, Moanalua. Form pyriform; size small to medium; cavity flaring, deep; stem somewhat short, rather thick; surface undulating, hard, coriaceous and slightly pitted; color dark green with medium abundant small irregular-shaped yellowish dots; apex a mere dot; skin medium thick, separating readily from the pulp; flesh yellowish in color, running into green at the rind, fine grained, melting and somewhat buttery, 70 per cent of the fruit; seed medium large, conical, fitting tightly in the seed cavity; flavor rich and nutty. Season, July to September. The tree is very vigorous. Height, 30 feet, spread 25 feet." (*Hawaii Agricultural Experiment Station Bulletin No. 25, p. 43.*)

"*Moanalua*, the round variety. This is not an easy thing to bud, and all the plants we have have been inarched. A good avocado, one of our best, it is a late variety, however, and on that account might not be as suitable for the climate of Florida as some of the early kinds." (*MacIntyre.*)

44105 to 44107. TRIFOLIUM PRATENSE L. Fabaceæ. Red clover.

From Denmark. Presented by Mr. H. Hertel, Danish Royal Agricultural Society, Copenhagen. Received February 8, 1917.

44105. "*Tystofte* No. 71, an early red clover. Furnished by the experimental station at Tystofte, near Tjaereby on Sealand. The seed raising of early red clover in general is, at the present time, sparse here in Denmark, where favorable conditions for the fecundations are lacking.

"For further information, see the 70th Beretning fra Statens Forsøgsvirksomhed i Plantekultur, page 216." (*Hertel.*)

44106. "*Tystofte* No. 87, a late clover. Furnished by the experimental station at Tystofte, near Tjaereby on Sealand. This is a new form, obtainable so far only in small quantities.

"For further information, see the 95th Beretning fra Statens Forsøgsvirksomhed i Plantekultur, page 392." (*Hertel.*)

44105 to 44107—Continued.

44107. "*Hersnap*, a late red clover. Furnished by the seed-raising society (Danske Landboforeningers Frøforsyning), Roskilde. This is the best species, being used largely at the present time.

"For further information, see the 95th Beretning fra Statens Forsøgsvirksomhed i Plantekultur, page 392." (*Hertel.*)

44108. Diospyros kaki L. f. Diosypraceæ. **Kaki.**

From Kioshan, Honan, China. Cuttings presented by Dr. Nathanael Fedde, American Lutheran Mission. Received January 22, 1917.

"The Honan red persimmon is of a size like that of the average tomato, and were it not for the large stiff calyx would be almost indistinguishable from one. Commonly, no seeds occur, but some have as many as four or five. The taste is sweet almost to a fault, with no suggestion of pucker unless the core is eaten. The juice leaves a permanent stain in linen." (*Fedde.*)

44109. Saccharum officinarum L. Poaceæ. **Sugar cane.**

From Santiago de las Vegas, Cuba. Presented by Mr. J. T. Crawley, director, Agricultural Experiment Station. Received February 12, 1917.

"*Demerara 74.*"

44110. Carica papaya L. Papayaceæ. **Papaya.**

From Brooksville, Fla. Presented by Mr. James Jennings, through Mr. J. E. Morrow. Received February 12, 1917.

"Seeds of a small-fruited highly flavored papaya. This tree seems to be unusually hardy and to endure considerable frost. Ripe fruit gathered from tree on February 5, 1917." (*Morrow.*)

44111 and 44112. Carica papaya L. Papayaceæ. **Papaya.**

From Pago Pago, American Samoa. Presented by Mr. J. M. Poyer, governor. Received February 12, 1917.

44111. "*Esi fafine.* Native of Samoa." (*Poyer.*)

44112. "*Esi palagi.* Introduced in Samoa." (*Poyer.*)

44113 and 44114.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received January 29, 1917.

44113. Aeschynomene sp. Fabaceæ.

Yellow sensitiva. See S. P. I. No. 44040 for previous introduction and description.

44114. Coccolobis uvifera L. Polygonaceæ.

"*Jarra.* Dense, small tree, with small very light-green leaves. A fine plum; seed one-third to two-fifths of the whole fruit, subacid. Hot climate." (*Wercklé.*)

44115. Lycopersicon esculentum Mill. Solanaceæ. **Tomato.**

From Lima, Peru. Presented by Mr. E. E. Wright, at the request of Mr. W. G. Bixby, Brooklyn, N. Y. Received February 16, 1917.

"*Tomate silvestre.*"

44116. FICUS PADIFOLIA H. B. K. Moraceæ.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received January 29, 1917.

"This tree differs completely from the rest of the genus in its superb form. It is very large and very dense and of an exceptionally beautiful color. It is evergreen, while nearly all the other species are bare for a longer or shorter time during the dry season. The fruit is apparently very much liked by birds, and the trees are always full of little parrots. Plant in fibrous fern peat or in turf with a little old mortar (ground) and a little charcoal dust or in common vegetable peat with ground mortar (sand and lime) and charcoal dust." (*Wercklé.*)

44117. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

From Lima, Peru. Presented by Mr. E. E. Wright, at the request of Mr. W. G. Bixby, Brooklyn, N. Y. Received February 16, 1917.

"Cultivated Peruvian tomato from Lurin Valley." (*Wright.*)

44118. RHYNCHOSIA sp. Fabaceæ.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received January 29, 1917.

"*Yellow vetch.* A small blooming annual forage plant, growing now in the dry season, while the *yellow sensitiva* [S. P. I. No. 44113] is completely dried. After the *yellow sensitiva*, our best soil enricher." (*Wercklé.*)

44119. PSYCHOTRIA BACTERIOPHILA Valet. Rubiaceæ.

From Buitenzorg, Java. Roots presented by Mr. P. J. S. Cramer, chief, Plant Breeding Station. Received February 14, 1917.

A shrub, 2 to 3 meters high, native of the Comoro Islands, Madagascar. The elliptic or ovate-oblong, fleshy, dark-green leaves are short petioled and usually thickly covered with little tubercles formed by bacteria. The greenish white flowers are in numerous dense thyrses up to 3 inches long, and the fruits are subglobular drupes about a quarter of an inch in diameter. (Adapted from *Valeton, Icones Bogorienses, vol. 3, pl. 271.*)

See also S. P. I. No. 44295 in this inventory for notes on these bacterial leaf nodules in the Rubiaceæ.

44120 to 44122. CHAYOTA EDULIS Jacquin. Cucurbitaceæ.

(*Sechium edule* Swartz.) **Chayote.**

From Funchal, Madeira. Presented by Mr. J. E. Blandy. Received February 12, 1917.

"*Pipinella* or *chu-chu.*" (*Blandy.*)

44120. Large smooth green.

44121. Medium spiny green.

44122. Large smooth white.

44123 to 44126.

From Cairo, Egypt. Presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received January 5, 1917.

44123. CASSIA BICAPSULARIS L. Cæsalpiniaceæ.

A shrub, found throughout tropical and subtropical South America and cultivated in tropical Asia, 2 to 3.5 meters high, with compound

44123 to 44126—Continued.

leaves up to 9 cm. long, yellow flowers, and curved or straight pods up to 15 cm. long by 1.5 cm. wide. In Porto Rico this shrub is known by the native names of *sen del pais* and *hoja de sen.* (Adapted from *Perkins, Contributions from the National Herbarium, vol. 10, p. 158.*)

44124. CROTALARIA JUNCEA L. Fabaceæ. **Sunn hemp.**

An erect yellow-flowered annual, 4 to 5 feet high, native of tropical Asia generally and commonly occurring in the dry region of Ceylon. It is cultivated in many places in India and also in northern Ceylon for the sake of the strong and useful fiber obtained from the stems. This fiber is used in India for making coarse canvas, cordage, and fishing nets, and an average yield is about 640 pounds an acre. A light, rich soil is considered best for growing this plant, although with cultivation it may be grown on almost any soil. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, pp. 549–550.*)

44125. GLYCOSMIS sp. Rutaceæ.

Received as *Glycosmis pleiogyne* for which no place of publication has been found. This is probably merely a garden name for a form of *G. pentaphylla*, a small spineless shrub with dark-green glossy leaves, small fragrant white flowers, and translucent pinkish berries.

44126. WIGANDIA URENS (Ruiz and Pav.) H. B. K. Hydrophyllaceæ.

A tall, coarse, woody perennial, from the mountainous regions of Mexico, with ovate, rusty hairy leaves, one-sided spikes of violet flowers, and densely hairy capsules. Propagation is generally by seed. The chief value of wigandias is as foliage plants for subtropical bedding; they can not endure frost. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1975.*)

44127. DAVIDIA INVOLUCRATA VILMORINIANA (Dode) Hemsl. Cornaceæ.

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received February 10, 1917.

A western Chinese tree, 40 to 50 feet high, with alternate, bright-green, ovate, coarsely serrate leaves 2 to 4½ inches long and inconspicuous flowers in terminal, globular heads about an inch long. In the British Isles this tree is quite hardy, and though it can be propagated by cuttings the plants raised from seeds show the greatest vigor. (Adapted from *Curtis's Botanical Magazine, vol. 138, p. 8432.*)

44128. SOLANUM sp. Solanaceæ. **Wild potato.**

From Ciudad Lerdo, Durango, Mexico. Tubers presented by Dr. Elswood Chaffey, through Dr. J. N. Rose, United States National Museum. Received February 20, 1917.

"I have often heard of these native potatoes, but until now have not seen them. I presume that you already know them, but I think that sometimes a fresh lot may be useful to cross with the cultivated varieties to produce, if possible a stock more resistant to the ills that potatoes may be prone to." (*Chaffey.*)

44129. DATURA DISCOLOR Bernh. Solanaceæ.

From Bard, Calif. Presented by Mr. C. E. Peterson, Yuma Experiment Farm. Received February 12, 1917.

A low, somewhat hairy, annual herb, found in Colorado, Arizona, and southeastern California. It has more or less deeply toothed leaves and purplish white flowers 2 or 3 inches long. The thickish seeds are dark colored with wrinkled or pitted crustaceous coats. (Adapted from *Gray, Synoptical Flora of North America, vol. 2, p. 240.*)

44130. DIOSPYROS EBENASTER Retz. Diospyraceæ. Black sapote.

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. Received February 12, 1917.

An ornamental Mexican tree with oblong-oval glossy leaves about 4 inches long and light-green edible fruits up to 4 inches in diameter with very dark-brown sweetish pulp. (Adapted from *note of Wilson Popenoe, under S. P. I. No. 39719,* which see for further description.)

44131. HIBISCADELPHUS GIFFARDIANUS Rock. Malvaceæ.

From Honolulu, Hawaii. Presented by Mr. Joseph F. Rock, College of Hawaii. Received February 13, 1917.

A rather low Hawaiian tree with an inclined trunk about a foot in diameter, deep magenta flowers, and large yellowish capsules. (Adapted from *Rock, Indigenous Trees of the Hawaiian Islands, p. 299.*)

See also S. P. I. No. 42879 for further description.

44132 to 44134. FRAXINUS POTAMOPHILA Herd. Oleaceæ. Ash.

From Kashgar, Chinese Turkestan. Presented by Mr. George MacCartney, British consul general, through Mr. Walter Hines Page, ambassador, London. Received February 15, 1917.

"*Imodon.* The consul general states that, so far as he is aware, there is no special difference of climate or soil between Kashgar or Khotan, nor is there any difference in the ash trees of these two places." (*Page.*)

44132. "Package No. 1. Seeds gathered at Kashgar."

44133. "Package No. 2. Seeds gathered at Kashgar."

44134. "Package No. 3. Seeds gathered at Kashgar."

See S. P. I. Nos. 30414 and 30652 for previous introductions.

For an illustration of the Imodon ash, see Plate IV.

44135 to 44142.

From the Philippine Islands. Presented by Mr. P. J. Wester, through Mr. Adn. Hernandez, director, Bureau of Agriculture, Manila. Received February 8, 1917.

44135. CARICA PAPAYA L. Papayaceæ. Papaya.

"Grown in Luzon Province."

44136. CITRUS LIMETTA AROMATICA Wester. Rutaceæ.

Dalayap. "No. 741. Grown in Luzon Province."

A spiny Philippine shrub collected at Palawan, with slender willowy branches, dull-green ovate-elliptic serrate leaves up to 10 cm. long,

44135 to 44142—Continued.

purplish white flowers borne singly or in terminal or axillary cymes, and roundish, smooth, lemon-yellow fruits 5 cm. long with thin skin, pale-green, juicy, sharply acid pulp, and very numerous small seeds. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 25.*)

44137 and 44138. Citrus medica nana Wester. Rutaceæ.

Dwarf citron.

A small thorny shrub, collected at Cebu, rather common in the Philippines, with loose cymes of purplish white flowers and roundish egg-shaped, smooth, yellow fruits 2½ inches or more long. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 23.*)

44137. "No. 27. Grown in Luzon Province."

44138. "No. 2384. Grown in Luzon Province."

44139. Citrus medica odorata Wester. Rutaceæ.

Tihi-tihi. "Grown in Luzon Province."

See also S. P. I. Nos. 41717 and 44089 for further description.

44140. Citrus mitis Blanco. Rutaceæ. **Calamondin.**

"No. 2534. Grown in Luzon Province."

A small, somewhat spiny Philippine tree, 4 to 6 meters high, with oblong elliptic leaves up to 9 cm. long, axillary, usually solitary, white fragrant flowers 21 mm. wide, and globular, orange-yellow, smooth, thin-skinned fruits 2 to 4 cm. long, with orange-colored, acid, juicy pulp containing large, smooth seeds. The calamondin, both wild and cultivated, is widely distributed in the Philippines, and the trees are nearly always very prolific. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, pp. 12–13.*)

"This is now widely distributed in Florida, under the incorrect name of Panama orange, from early distributions of S. P. I. No. 2886, which came from Panama." (*Fairchild.*)

44141. Pennisetum ciliare (L.) Link. Poaceæ. **Grass.**
(*P. cenchroides* Rich.)

A low, spreading, perennial grass with short spikes.

44142. Carica papaya L. Papayaceæ. **Papaya.**

"Grown in Cavite Province."

44143. Aeschynomene sp. Fabaceæ.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received February 14, 1917.

"*Yellow sensitiva.* Best soil improver; not troublesome. Hand-picked seed; free from weeds." (*Wercklé.*)

See also S. P. I. Nos. 44040 and 44113 for previous introductions and description.

44144. Stizolobium niveum (Roxb.) Kuntze. Fabaceæ.

Velvet bean.

From Mowbray, Cape Province, South Africa. Purchased from Messrs. C. Starke & Co. Received February 14, 1917.

Kudu-Laing bean, said to be a hybrid velvet bean.

44145 to 44151.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 9, 1917.

44145. Pyrus ussuriensis Maxim. Malaceæ. Pear.

"(No. 126b. Peking, China, December 29, 1916.) Twelve large and twelve small specimens of the Peking white pear, *Pai li*, some with and others without calyx." (*Meyer.*)

Received as *Pyrush simonii*, which is now referred by Mr. Rehder to *P. ussuriensis*.

44146. Pyrus lindleyi Rehder. Malaceæ. Pear.
(*P. sinensis* Lindl.)

"(No. 127b. Peking, China, December 19, 1916.) *Hung hsiao li*, meaning 'red smile pear.' A remarkable pear of apple shape, with a bright-red blush on one side, while the other side is yellowish, often tinged with green; meat sour and hard; calyx deciduous; peduncle long. A very good keeper and shipper. Of value in breeding experiments. Scions sent under No. 1266 [S. P. I. No. 44164]." (*Meyer.*)

44147. Pyrus ussuriensis Maxim. Malaceæ. Pear.

"(No. 128b. Tsunhwachow, Chihli Province, China, December 9, 1916.) Specimens of the 'big sour pear,' *Ta suan li*, showing size and persistency of calyx. Scions sent under No. 1272 [S. P. I. No. 44169]." (*Meyer.*)

44148. Pyrus ussuriensis Maxim. Malaceæ. Pear.

"(No. 129b. Tsunhwachow, Chihli Province, China, December 9, 1916.) Specimens of the 'eight li fragrant pear,' *Pa li hsiang li*. Notice persistent calyx, short peduncle, and fine aroma." (*Meyer.*)

44149. Picea meyeri Rehd. and Wils. Pinaceæ. Spruce.

"(No. 133b. Shinglungshan, Chihli Province, China, December 3, 1916.) A tall-growing spruce, often having bluish needles." (*Meyer.*)

"This quadrangular-leaved spruce is characterized by its hairy shoots, curved nonpungent leaves, and medium-sized symmetrical cones with rounded or truncate scales. It is most closely related to *Picea gemmata* Rehd. and Wils., which has similarly hairy shoots, more densely hairy buds, very pungent leaves, and larger cones with much broader scales. It is also related to *P. asperata* Masters, which has paler, more yellow, less pubescent shoots, slightly pungent leaves, larger cones with rhombic scales paler in color, and winter buds with more loosely appressed and more recurved scales. The shoots in *P. meyeri* show great variation in degree of pubescence, and this is not constant from year to year on the same branch. One year a shoot may be densely pubescent and the next year the new shoot on the same branch almost glabrous." (*Sargent, Plantae Wilsonianae, vol. 2, p. 28–29.*)

44150. Pyrus ussuriensis Maxim. Malaceæ. Pear.

"(No. 2354a. Malanyu, Chihli Province, China, December 7, 1916.) *Ta tzŭ hsiang li*, meaning 'Tartar fragrant pear.' A small variety of Chinese pear, of globose form, having a persistent calyx and a short peduncle; color greenish; flesh of aromatic, pleasant tart flavor becoming melting in December. This pear possibly may prove to be immune to pear-blight." (*Meyer.*)

44145 to 44151—Continued.

44151. PYRUS USSURIENSIS Maxim. Malaceæ. **Pear.**

"(No. 2355a. Malanyu, Chihli Province, China, December 7, 1916.) *Suan li*, meaning 'sour pear.' A medium-sized Chinese pear of globose form and of green color. Calyx persistent, length of peduncle varies considerably in different specimens. Flesh somewhat gritty and quite sour. This pear can not be eaten raw except when it has been once frozen, after which it becomes melting. By cooking them, however, a sour sauce can be obtained, which missionaries find acceptable as a substitute for sour apple sauce. Possibly this pear also may be found to be resistant to pear-blight." (*Meyer.*)

44152 to 44156. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Bridgetown, Barbados, British West Indies. Seeds presented by Mr. John R. Bovell, Superintendent of Agriculture. Received February 17, 1917.

44152. "B. H. 10 (12). One of the best, if not the best, of all the sugar-cane seedlings I have as yet grown. The average sucrose content of this cane for three years was 2.33 pounds per gallon." (*Bovell.*)

44153. "Ba. 6032."

44154. "Ba. 7924."

44155. "B–7169."

44156. "B–6308."

44157 to 44162. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Bridgetown, Barbados, British West Indies. Cuttings presented by Mr. John R. Bovell, Superintendent of Agriculture. Received February 17, 1917.

44157. "B–6450."

44158. "B–7169."

44159. "B. H. 10 (12)." See S. P. I. No. 44152.

44160. "Ba. 2471."

44161. "Ba. 6032." See S. P. I. No. 44153.

44162. "Ba. 7924." See S. P. I. No. 44154.

44163 to 44174.

From China. Cuttings collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 9, 1917.

44163. PYRUS USSURIENSIS Maxim. Malaceæ. **Pear.**

"(No. 1265. Maoshan, near Malanyu, Chihli Province, December 8, 1916.)"

See S. P. I. No. 44151 for description.

44164 to 44168. PYRUS LINDLEYI Rehder. Malaceæ. **Pear.**
(*P. sinensis* Lindl.)

44164. "(No. 1266. Maoshan, near Malanyu, Chihli Province, December 8, 1916.)"

See S. P. I. No. 44146 for description. Seeds were received under No. 127b [S. P. I. No. 44146].

44163 to 44174—Continued.

44165. "(No. 1267. Maoshan, near Malanyu, Chihli Province, December 8, 1916.) *Fo t'ien hsi li*, meaning 'Emperor's beloved pear.' A medium-sized pear of somewhat compressed shape, yellow at the base and russet-brown toward the peduncle, calyx deciduous, peduncle medium long, flesh hard, but juicy and sweet. A good keeper and shipper. Of value in breeding experiments." (*Meyer.*)

44166. "(No. 1268. Maoshan, near Malanyu, Chihli Province, December 8, 1916.) *Ma li*, meaning 'dotted pear.' A medium large pear of waxy yellow color, with little dots scattered over the skin, especially near the peduncle. Flesh hard, sweet, and a trifle coarse; calyx deciduous. Of value in breeding experiments." (*Meyer.*)

44167. "(No. 1269. Maoshan, near Malanyu, Chihli Province, December 8, 1916.) *Chin hsing mi li*, meaning 'golden star honey pear.' A rather small pear, of canary-yellow color; flesh hard, but juicy and sweet; a good keeper. Some specimens have well-developed persistent calyxes, while in others they are absent; peduncles long. Of value in breeding experiments." (*Meyer.*)

44168. "(No. 1270. Maoshan, near Malanyu, Chihli Province, December 8, 1916.) *Tz'ŭ li*, meaning 'pointed pear.' An interesting pear, of medium-large size and a tublike shape; color yellow with rosy red blush; meat firm, juicy, sweet, and of good flavor; a good keeper and of very attractive appearance. Of value in breeding experiments." (*Meyer.*)

44169. PYRUS USSURIENSIS Maxim. Malaceæ. **Pear.**

"(No. 1272. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.) *Ta suan li*, meaning 'big sour pear.' An improved form of sour pear, being larger and juicier than No. 2355a [S. P. I. No. 44151]. Otherwise the same remarks apply to it." (*Meyer.*)

44170 to 44174. PYRUS LINDLEYI Rehder. Malaceæ. **Pear.**
(*P. sinensis* Lindl.)

44170. "(No. 1273. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916). *Ts'ŭ li*, meaning 'pointed pear.'"

See S. P. I. No. 44168 for description.

44171. "(No. 1274. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.) *Ê li*, meaning 'goose pear.' An elongated, yellow pear, ripening in September and not possessing keeping qualities. Of value in breeding experiments." (*Meyer.*)

44172. "(No. 1276. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.) *P'in ti ch'iu pai li*, meaning 'applelike autumn white pear.' A variety of pear said to be flat, apple shaped, with a broad base; of yellow color. Possesses keeping qualities." (*Meyer.*)

44173. "(No. 1277. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.) *Chien ti ch'iu pai li*, meaning 'pointed-base autumn white pear.' A variety of pear said to be like No. 1276 [S. P. I. No. 44172], but having a tapering base." (*Meyer.*)

44174. "(No. 1278. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.)"

See S. P. I. No. 44167 for description.

44175 and 44176.

From China. Roots collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 9, 1917.

44175. Iris dichotoma Pall. Iridaceæ.

"(No. 1280. Near Malanyu, Chihli Province, November 24, 1916.) An iris found amidst stony débris on a hillside; apparently of very low growth." (*Meyer.*)

44176. Pyrus ussuriensis Maxim. Malaceæ. **Pear.**

"(No. 1281. Shinglungshan, Chihli Province, December 3 and 4, 1916.) A variety of pear, small in size, flattened, apple shaped, of russet-yellow color, occasionally with a slight blush covered with many small dots. Calyx persistent, peduncle short. Becomes soft in early winter and has a very pleasant tart flavor." (*Meyer.*)

44177. Amygdalus nana × persica. Amygdalaceæ. **Hybrid peach.**

From Excelsior, Minn. Cuttings presented by Mr. Charles Haralson, superintendent, Fruit Breeding Farm. Received February 23, 1917.

"A hybrid between *Amygdalus nana* and the Bokhara No. 3 peach. This hybrid grows to about 8 feet on *Prunus americana* stock, is perfectly hardy, and is the best bloomer in the spring of all the stone fruits. The tree produced an abundance of pink blossoms, larger than *Amygdalus nana*, but has never borne any fruit. The foliage is glossy dark green and stays on until the frost gets it in the fall." (*Haralson.*)

44178 to 44180.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens. Received February 14, 1917.

44178. Amaranthus paniculatus L. Amaranthaceæ. **Amaranth.**

Seeds secured from the Director of Agriculture, Kashmir.

A tall, handsome plant, 4 to 6 feet high, cultivated in eastern and western Asia and Africa. The lance-elliptic leaves are 2 to 6 inches long, and the numerous flowers are borne in dense red or gold-colored spikes. The subglobose seeds are white, red, or black, and because of their farinaceous nature form the staple food of the poorer classes of the hill tribes in many parts of India, where the plant is known as *rájgira*. (Adapted from *Cooke, Flora of the Presidency of Bombay, vol. 2, p. 489.*)

44179. Myricaria germanica (L.) Desv. Tamaricaceæ.

A shrub, 6 to 8 feet high, related to Tamarix, found throughout most parts of Europe and the Himalayas. The flowers are pink and are borne in spikes. (Adapted from *Lindley, Treasury of Botany, vol. 2, p. 770.*) See also S. P. I. No. 39630 for further description.

44180. Trachycarpus takil Beccari. Phœnicaceæ. **Palm.**

"A further supply that I have just received from the original habitat." (*Hartless.*)

"A palm from Mount Takil, Himalaya, closely related to *Trachycarpus martiana*." (Note of *A. C. Hartless, February 1, 1916.*)

See S. P. I. No. 41871 for previous introduction.

44181 to 44183.

From the Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamao Experiment Station, through Mr. Adn. Hernandez, director, Bureau of Agriculture, Manila. Received January 23, 1917.

44181. Calamus sp. Phœnicaceæ. Rattan.

"Seeds of the *litoco*, received from Kiangan, northern Luzon. Fruits in branching racemes, 15 to occasionally more than 30 on a branch, sessile; 20 to sometimes exceeding 25 mm. in diameter, averaging 7 grams in weight, somewhat irregularly roundish, apex a black bony projection; the skin consists of a thin scaly shell that peels off the flesh like an eggshell and is rather ornamental. As stated, the flesh separates perfectly from the skin and also divides into three segments, two of which are usually seedless; sometimes there are no seeds in the fruit. The flesh is light brown, subacid, with a very sprightly, pleasant flavor, somewhat astringent. In flavor the fruit resembles the lanzon more than any other that I have eaten, but is somewhat more tart. The seed is small and free from the pulp. The fruit is a good keeper, and in its native state undoubtedly is one of the best small fruits that I have ever come across. The *litoco* grows at an elevation of about 700 or more meters, where the rainfall is rather evenly distributed." (*Wester.*)

44182. Cecropia palmata Willd. Moraceæ. Trumpet tree.

A West Indian tree up to 50 feet in height. At the top of the long, thin, weak trunk are a few horizontal or deflexed awkward branches bearing large palmate leaves divided like thumbs, with white hairy lower surfaces. The branches and trunk are hollow, with partitions at the nodes, and ants often make their homes in them. The juice is milky, the flowers are very small, and the fruits are small 1-seeded nuts. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 697.*)

44183. Genipa americana L. Rubiaceæ. Genipa.

See S. P. I. Nos. 37833 and 44090 for further description.

44184 to 44186. Solanum spp. Solanaceæ. Wild potato.

From Lima, Peru. Tubers presented by the director, Ministerio de Fomento, Estacion Central Agronomica. Received February 23, 1917.

44184. Solanum immite Dunal.

"Tubers of three plants of *Solanum immite* obtained from seeds in 1916."

44185. Solanum maglia Schlecht.

A nearly glabrous wild potato, native of Chile, about 2 feet high, with angled, winged stems, compound light-green leaves 4 to 8 inches long, compound cymes of white flowers 1 inch wide, and subglobose or oblong tubers up to 1½ inches long, with smooth, reddish brown surfaces. When boiled the tubers shrink and become watery and insipid. (Adapted from *Curtis's Botanical Magazine, pl. 6756.*)

44186. Solanum sp.

"Harvested in Amancaes in October, 1916."

Received as *Solanum tuberosum sylvestre*; probably a wild species; to be grown for identification.

44187. DIOSPYROS EBENASTER Retz. Diospyraceæ. **Black sapote.**

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. Received February 26, 1917.

See S. P. I. No. 44130 for description.

44188 to 44192.

From Santa Cruz, Argentina. Presented by Mrs. Helen E. Reynard, Hillside, Newark, England, through Mr. G. M. Hitch, American consul, Nottingham, England. Received February 19, 1917.

44188. CROTALARIA sp. Fabaceæ.

"Seeds of a close-growing plant with pea-shaped flowers, brownish yellow in color, sweet smelling." (*Reynard.*)

44189. OENOTHERA ODORATA Jacq. Onagraceæ. **Evening primrose.**

A suffrutescent Chilean plant with attractive yellow flowers which turn purplish before falling.

44190. VICIA sp. Fabaceæ. **Vetch.**

"Seeds of a mauve-blue vetch." (*Reynard.*)

44191. ASTER sp. Asteraceæ.

"Gentian-blue prickly flowers; close-growing plants in clumps on stony soil." (*Reynard.*)

44192. PODOCOMA sp. Asteraceæ.

"A bush with yellow flowers." (*Reynard.*)

44193. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From St. Lucia, British West Indies. Presented by the Agricultural Superintendent at the request of Hon. Francis Watts, Commissioner of Agriculture for the West Indies. Received February 27, 1917.

"*Christophine;* green variety. The green and white varieties appear to be the only ones known in these islands." (*Watts.*)

44194. INODES EXUL O. F. Cook. Phœnicaceæ. **Palmetto.**

From Victoria, Tex. Presented by Mr. J. R. Fleming. Received February 17, 1917.

A large palmetto, cultivated in Texas, with deep-green foliage, solitary fruits, and large seeds not wrinkled above. (Adapted from *O. F. Cook, Bureau of Plant Industry Circular 113, pp. 11–14.*)

See also S. P. I. No. 35116 for further description.

44195. CARICA PAPAYA L. Papayaceæ. **Papaya.**

From Fort Myers, Fla. Presented by Mr. Hans Zeman. Received February 27, 1917.

"Seeds from a 10-pound fruit." (*Zeman.*)

44196. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Cairo, Egypt. Presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received February 28, 1917.

44197 to 44200.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Calif., February 21, 1917.

44197 and 44198. Castanea mollissima Blume. Fagaceæ. Chestnut.

44197. "No. 2324a. Peking, China, November 10, 1916.) A good quality of Chinese chestnuts, said to come from the Pangshan district to the northeast of Peking. Dark-colored nuts. Price, 7 cents (Mex.) per pound." (*Meyer.*)

44198. "(No. 2325a. Peking, China, November 10, 1916.) Chinese chestnuts of good quality, said to come from the Pangshan district to the northeast of Peking. Light-colored nuts. Price, 6 to 8 cents (Mex.) per pound." (*Meyer.*)

44199 and 44200. Juglans regia L. Juglandaceæ. English walnut.

44199. "(No. 2326a. Peking, China, November 10, 1916.) Chinese walnuts, large size, said to come from the mountains west of Peking. Price, 11 cents (Mex.) per catty. Chinese walnuts seem especially adapted to semiarid regions with warm summers and dry, cold winters." (*Meyer.*)

44200. "(No. 2327a. Peking, China, November 10, 1916.) Chinese walnuts, medium size, said to come from the mountains west of Peking. Price, 9 cents (Mex.) per catty." (*Meyer.*)

44201. Persea americana Mill. Lauraceæ. Avocado.

(*P. gratissima* Gaertn. f.)

From Ceiba, Honduras. Cuttings presented by Mr. Francis J. Dyer, American consul. Received March 7, 1917.

"This tree grows on the property of Mr. Jos. Taranto, in the business quarter of La Ceiba. It is said to produce the best fruit known locally, and it certainly is better than any others I have seen in the local markets." (*Dyer.*)

44202. Mammea americana L. Clusiaceæ. Mamey.

From Mount Coffee, Liberia. Presented by Mr. Henry O. Stewart. Received February 23, 1917.

A tree 40 to 50 feet high, native of tropical America and the West Indies, with large, leathery, shining leaves and white, scented flowers. The nearly spherical fruit is 3 to 5 inches in diameter, with a thick, barky skin and sweetish orange-colored pulp, which is eaten raw or stewed or preserved with sugar. The small flowers are sometimes distilled, the product thus obtained being used in flavoring liquors. Propagation is by seed. (Adapted from *Macmillan, Handbook of Tropical Gardening, p. 169.*)

44203 to 44238.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 9, 1917.

44203. Ziziphus jujuba Mill. Rhamnaceæ. Jujube.

(*Z. sativa* Gaertn.)

"(No. 2330a. Peking, China, December 16, 1916.) A small quantity of cleaned jujube stones, obtained mostly from large fruits. To be sown in California and in Texas to obtain new types." (*Meyer.*)

44203 to 44238—Continued.

44204. Zea mays L. Poaceæ. **Corn.**

"(No. 2332a. Malanyu, Chihli Province, China, November 25, 1916.) *Yü mi*, meaning 'imperial rice.' A large-grained yellow flint corn, cultivated on rich bottom lands in the mountains." (*Meyer.*)

44205. Perilla frutescens (L.) Britton. Menthaceæ.
(*P. ocymoides* L.)

"(No. 2333a. Malanyu, Chihli Province, China, November 25, 1916.) *Su tzŭ*. An odoriferous annual, the seeds of which contain a great percentage of oil which is used in waterproofing paper and cloth. They are also much fed to song birds in winter. The young tops are employed in giving flavor to certain pickles." (*Meyer.*)

44206. Cannabis sativa L. Moraceæ. **Hemp.**

"(No. 2334a. Malanyu, Chihli Province, China, November 25, 1916.) *Sheng ma*, meaning 'thread hemp.' A variety of hemp, producing very strong fiber of medium length. Thrives especially well on lands recently cleared of brush or timber." (*Meyer.*)

44207. Abutilon theophrasti Medic. Malvaceæ. **Indian mallow.**
(*A. avicennae* Gaertn.)

"(No. 2335a. Malanyu, Chihli Province, China, November 27, 1916.) *Ch'ing ma*, meaning 'green hemp.' A variety of Abutilon hemp, producing a very much stronger fiber than the common sort. Does especially well on rich bottom lands." (*Meyer.*)

44208. Fagopyrum vulgare Hill. Polygonaceæ. **Buckwheat.**
(*F. esculentum* Moench.)

"(No. 2336a. Malanyu, Chihli Province, China, November 25, 1916.) *Ch'iao mai*, meaning 'triangular wheat.' Chinese buckwheat, grown as a late crop on poor lands and on mountain slopes. From the flour a very thin and brittle vermicelli is manufactured, from which a meal can be prepared within a few minutes." (*Meyer.*)

44209 to 44214. Soja max (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

"From Malanyu, Chihli Province, China, November 25, 1916."

44209. "(No. 2337a.) *Huang tou*, meaning 'yellow bean.' An early-maturing medium-sized yellow variety of soy bean, primarily used to make bean curd." (*Meyer.*)

44210. "(No. 2338a.) *Huang tou*, meaning 'yellow bean.' A late-maturing medium-sized yellow variety used for oil production and in making bean curd and sauce." (*Meyer.*)

44211. "(No. 2339a.) *Ta ch'ing tou*, meaning 'large green bean.' A pale-green variety, used in bean curd and sauce manufacture." (*Meyer.*)

44212. "(No. 2340a.) *Ch'ing tou*, meaning 'green bean.' A green variety, often used as an appetizer with meals when slightly sprouted and salted or when fried and salted." (*Meyer.*)

44213. "(No. 2341a.) *Ch'ing tou*, meaning 'green bean.' A green variety, slightly different from No. 2340a [S. P. I. No. 44212]. Used as an appetizer with meals when slightly sprouted and salted or when fried and salted." (*Meyer.*)

44203 to 44238—Continued.

44214. "(No. 2342a.) *Hei tou*, meaning 'green bean.' A small, shining, black soy bean, generally used, when boiled, as a food for hard-working horses, mules, donkeys, and oxen, mixed with chopped straw and kaoliang grains." (*Meyer.*)

44215 to 44217. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

"From Malanyu, Chihli Province, China, November 25, 1916. *Yün tou*, meaning 'fragrant bean.' Garden beans eaten mostly when green, as a vegetable." (*Meyer.*)

Selections made from No. 2343a.

44215. Bluish black.

44216. Pure white mixed with ivory white.

44217. Maroon mixed with gray.

44218 to 44221. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

"From Malanyu, Chihli Province, China, November 25, 1916."

44218. "(No. 2344a.) *No ling tan chiang tou*, meaning 'wren's egg precious bean.' A speckled variety of cowpea with white top. Cowpeas are in great favor with the Chinese as a human food; they are eaten boiled with rice, stewed in meat dishes, and cooked in soups; they are believed to promote speedy excretions of waste in the body." (*Meyer.*)

44219. "(No. 2345a.) *Hung chiang tou*, meaning 'red precious bean.' A small brown variety of cowpea." (*Meyer.*)

44220. "(No. 2346a.) *Hei yen pai chiang tou*, meaning 'black-eyed white precious bean.' A small, wrinkled, white cowpea, with black hilum." (*Meyer.*)

44221. "(No. 2347a.) *Hung yen pai chiang tou*, meaning 'red-eyed white precious bean.' A small, wrinkled, white cowpea with reddish hilum." (*Meyer.*)

"A brown-eyed variety of cowpea, quite similar to S. P. I. No. 34103, which seems fairly promising as a table variety." (*C. V. Piper.*)

44222 to 44226. PHASEOLUS AUREUS Roxb. Fabaceæ. Mung bean.

"From Malanyu, Chihli Province, China, November 25, 1916."

Selected from No. 2347a, which was a mixed lot of seeds.

44222. "Apparently ordinary green mung. Seed much like S. P. I. No. 17289, which was grown from seed received from China." (*C. V. Piper.*)

44223. "Green mung. Seeds rather shiny, much the same as S. P. I. No. 28053 from Manchuria and F. C. I. 01896, a green mung selected from No. 31806, which is a field pea received from Chinese Turkestan." (*C. V. Piper.*)

44224. "Brown mung, much like S. P. I. No. 13395. *Newman* bean." (*C. V. Piper.*)

44225. "Seeds green to brownish, densely speckled with black, giving a black appearance to the seed. We have never had seed exactly like this, but S. P. I. No. 16323 is somewhat similar." (*C. V. Piper.*)

44226. "Apparently the same as S. P. I. No. 44225, but seeds dull, the dullness due to crenulation." (*C. V. Piper.*)

44203 to 44238—Continued.

44227 and 44228. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Fabaceæ. **Adsuki bean.**

"From Malanyu, Chihli Province, China, November 25, 1916."

Selected from No. 2347a.

44227. "An adsuki bean, greenish buff to brown, speckled and mottled with black, similar to S. P. I. No. 25141; received from Soochow, China." (*C. V. Piper.*)

44228. "Seed greenish, straw or buff color, similar to S. P. I. No. 19185; received from China." (*C. V. Piper.*)

44229 and 44230. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"From Malanyu, Chihli Province, China, November 25, 1916."

44229. Selected from 2347a. "Red and white variety. Seed appears identical with that of S. P. I. No. 36078." (*C. V. Piper.*)

44230. "No. 2348a. *Hua yao chaing tou*, meaning 'flower kidney precious bean.' A large variety of cowpea, of reddish brown color with white tip." (*C. V. Piper.*)

44231. PISUM SATIVUM L. Fabaceæ. **Pea.**

"(No. 2349a. Malanyu, Chihli Province, China, November 25, 1916.) *Wan tou*, meaning 'ten thousand beans.' A small white garden pea, cultivated for human consumption. In winter these peas are often forced in hot, dark, moist rooms and the sprouts eaten scalded." (*Meyer.*)

44232. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Fabaceæ. **Adsuki bean.**

"(No. 2350a. Malanyu, Chihli Province, China, November 25, 1916.) *Hei hsiao tou*, meaning 'black small bean.' An adsuki bean of marble-blackish color, used mostly to produce first quality bean sprouts." (*Meyer.*)

44233. JUGLANS MANDSHURICA Maxim. Juglandaceæ. **Manchurian walnut.**

"(No. 2351a. Shinglungshan, Chihli Province, China, December 3, 1916.) *Shan ho t'ao*, meaning 'mountain or wild walnut.' A wild walnut, occurring in Manchuria and northern China, growing into a stately tree. The nuts are small and contain but little meat, but they are eagerly eaten by the people. The young foliage is very sensitive to frosts and the trees can be grown successfully only in localities where late frosts are of rare occurrence. Of value as a hardy shade tree; possibly also as a stock for Persian walnuts in cold localities." (*Meyer.*)

44234. JUNIPERUS CHINENSIS L. Pinaceæ. **Juniper.**

"(No. 2352a. Peking, China, December 27, 1916.) *Pai shu.* Berries of the North Chinese juniper, a hardy, drought and alkali resistant evergreen tree, living to be many centuries old. Especially suited for dry climates with winters not too severe." (*Meyer.*)

44235 to 44237. PYRUS USSURIENSIS Maxim. Malaceæ. **Pear.**

44235. "(No. 2356a. Tsunhwachow, Chihli Province, China, December 10, 1916.) *Kuan li*, meaning 'bushy pear.' Seeds obtained from fresh fruits. A small pear, of greenish rusty color, of flattened apple shape; calyx persistent, peduncle short. Flesh becoming melting in early winter, of pleasant tart flavor, and possessing aroma. Comes close to the *Pa li hsiang li* and the *Ta tzŭ hsiang li*

44203 to 44238—Continued.

[S. P. I. No. 44150] Might possibly prove to be immune to fire-blight." (*Meyer.*)

44236. "(No. 2357a. Shinglungshan, Chihli Province, China, December 3 and 4, 1916.) Collected from wild trees which often reach great size, especially in the rich valleys where the trees are now being destroyed to make room for settlers. The bark is of a blackish gray color and characteristically grooved. Branches on young trees are often quite spiny. The fruits are said to ripen early in September, and as there are many rodents about they are soon carried away. To obtain a sufficient supply, one has to be on the spot when these fruits fall." (*Meyer.*)

44237. "(No. 2358a. Chiupatzeling, Shinglungshan district, Chihli Province, China. December 5, 1916.) Collected from wild trees. See Nos. 2356a and 2357a [S. P. I. Nos. 44235 and 44236] for further description." (*Meyer.*)

44238. QUERCUS spp. Fagaceæ.

"(No. 2359a. Shinglungshan, Chihli Province, China, December 3, 1916.) Various species of oaks mixed, among which species possibly exist that have not been introduced as yet to western horticulture." (*Meyer.*)

44239. GARCINIA MULTIFLORA Champ. Clusiaceæ.

From Kiayingchow, via Swatow, China. Presented by Miss Louise Campbell. Received March 7, 1917.

A shrub, native of southern China, with ovate leaves 3 to 3½ inches long, and perfect flowers in short terminal corymbs, appearing in the heat of summer. (Adapted from *Bentham, Flora Hongkongensis, p. 25.*)

"In a conversation with me on January 8, 1913, Mr. George Campbell, of Kiayingchow, described this fruit and the circumstances connected with its discovery by him as follows:

"'In October I was at Pine Mouth. It was the time of the autumn festival and there was a large crowd there. I wandered down a side street and saw a Chinese woman sitting down with a basket before her containing a fruit I had never seen before. It looked something like a guava, but it was symmetrical, round, and green in color, and I was sure it was not a guava. I got two or three of them, asked the woman about them, but all she knew was that they grew wild on the mountains. I took them to the boat and opened them. They were the size of a walnut with the husk on and made me think of a walnut. Upon opening one of the fruits, there was a layer as thick as your finger clear around, which could not be eaten—bitter pulp. Inside there was a nucleus of whitish, almost transparent flesh. There were three perfect seeds in the fruit, I think smaller than a persimmon seed. The inner pulp was very sweet, and the sweetness was that of a mangosteen, very pleasant. The Chinese have a name for this fruit, but it is entirely inappropriate. This fall I had it in mind, and while at Pine Mouth, inquired about the fruit. The people said there was no such thing, but I satisfied myself that some of them did know of the plant. I left some money with a doctor in Pine Mouth, Dr. Chang, and asked him to get some of the fruits for me, if possible, but shortly after this I was obliged to come to America with my wife, so have heard nothing of it. I did, however, ask the doctor to get the fruits, if possible, and send them to my daughter at Kiaying. I think that very few of these fruits come to the market and that there are very few trees, but I think by searching one could find a tree of the fruit.'

"Introduced as a possible stock for the less-hardy mangosteen. This shrub has stood several degrees of frost in the mountains of northern Kwangtung, where it is native." (*Fairchild.*)

44240. BAMBOS TULDA Roxb. Poaceæ. Bamboo.

From Dehra Dun, India. Presented by Mr. R. S. Hole, forest botanist, Forest Research Institute and College, at the request of the economic botanist, Poona. Numbered March 14, 1917.

An evergreen or deciduous tree bamboo, common in Bengal, India, with green or gray-green culms 20 to 70 feet high and 2 to 4 inches in diameter, and branches from nearly all the nodes. (Adapted from *J. S. Gamble, Bambuseæ of British India, p. 30.*)

This bamboo is said to furnish the so-called "Calcutta cane," used for the finest quality of split-bamboo fishing rods.

See S. P. I. No. 40886 for further description.

For an illustration of a clumb of Calcutta bamboos in Panama, see Plate V.

44241 and 44242.

From Augusta, Ga. Presented by Mr. R. C. Berckmans. Received February 26, 1917.

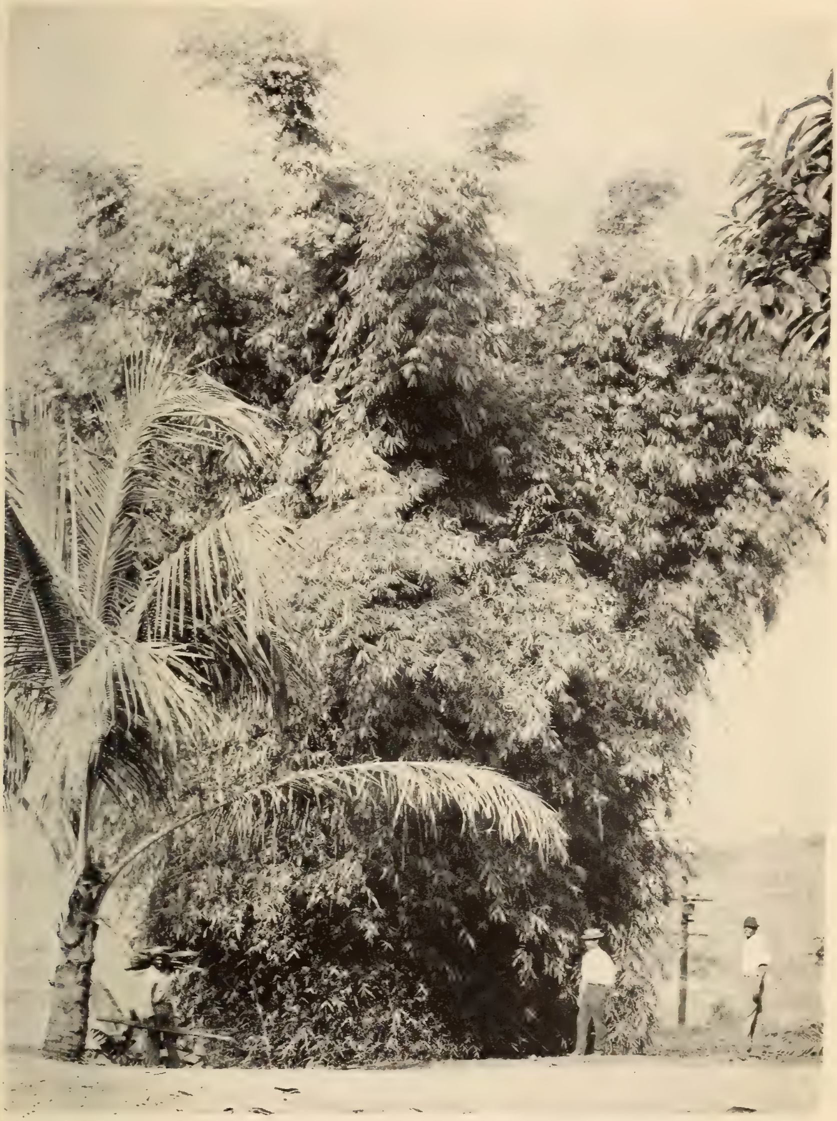
44241. CUDRANIA TRICUSPIDATA (Carr.) Bureau. Moraceæ. **Cudrania.**
(*Maclura tricuspidata* Carr.)

"This tree is very easily propagated from suckers. The tree that we have in our nursery is about 12 feet high and about 6 feet broad. It would have been considerably larger than this but for the fact that some four years ago we headed it back to about 3½ feet from the ground. This tree had at least 1½ bushels of fruit which had been matured from the middle of August up to the present time (November), and the specimens that it bore would run into the thousands. It is most prolific, and the fruit matures on the limbs like bunches of onions." (*Berckmans.*)

A compact, somewhat spiny, Chinese bush, with light-green leaves varying from three lobed to ovate in outline, which are used for feeding silkworms. The silk produced by silkworms fed on these leaves is employed in making lute strings, which give clearer tones than those made from ordinary silk. The tree is said to afford a reddish yellow dye called the *chê* yellow, used in dyeing the imperial garments. (Adapted from *Gardeners' Chronicle, vol. 24, p. 410.*)

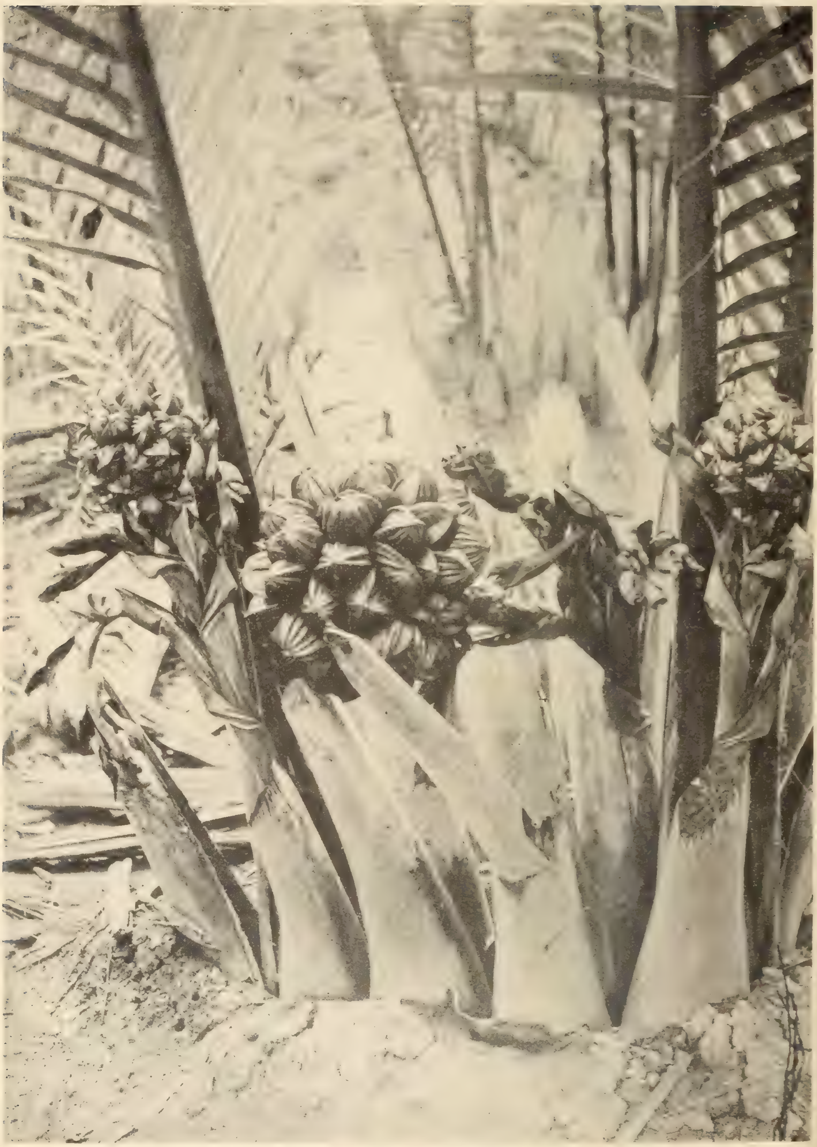
44242. PHELLODENDRON SACHALINENSE Sarg. Rutaceæ.

A rapid-growing tree, native of Saghalin, Chosen, western China, and northern Japan. It ascends to a height of 50 feet, forming a broad crown, and the dark-brown thin bark is not corky. The dull-green compound leaves are 3 to 5 inches long, and the black fruits, one-third of an inch in diameter, occur in broad panicles. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2578.*)



A CLUMP OF THE TULDA BAMBOO IN PANAMA (BAMBOS TULDA, S. P. I. NO. 44240).

A Wardian case filled with plants of this species of bamboo was sent to Washington in the spring of 1907 from Sibpur, near Calcutta, India, by Maj. A. T. Gage, superintendent of the Royal Botanic Garden there. Two years later plants were sent to Panama and central Florida, and some of these have grown into beautiful clumps; there is one at Mr. Nehrling's place near Gotha, Fla., and this clump in the Canal Zone. Later, thousands of seedlings from imported seeds were distributed. This species is ranked as one of the most useful plants of Bengal. Its culms are imported to America and used in the making of split bamboo fishing rods. (Photographed at Culebra, Canal Zone, 1917.)



THE NIPA PALM IN FRUIT (NYPA FRUTICANS, S. P. I. No. 44405).

Along the low lands near the coast of the Malay Archipelago this stemless palm, covering vast areas, raises its superb long leaves, like giant fern fronds, above the swamps. It deserves to be naturalized wherever it will grow, not only for its beauty, but for its possibilities as an alcohol-producing plant and for its leaves, from which beautiful floor mats are made. (Photographed by P. L. Bryant, of the Far Eastern Review, August, 1915; P25002FS.)

44243. INODES EXUL O. F. Cook. Phœnicaceæ. **Palmetto.**

From Victoria, Tex. Presented by Mrs. Martin O'Connor. Received March 9, 1917.

A large palmetto, cultivated in Texas, with deep-green foliage, solitary fruits, and large seeds not wrinkled above. (Adapted from *O. F. Cook, Bureau of Plant Industry Circular 113, pp. 11–14.*)

"These have been through several freezes." (*O'Connor.*)

See also S. P. I. No. 35116 for further description.

44244. ANNONA SQUAMOSA L. Annonaceæ. **Sugar-apple.**

From Dindigul, South India. Presented by Rev. Willis P. Elwood, American Madura Mission. Received March 9, 1917.

"Seeds of sugar or custard-apple. Some of it I saved myself, but a greater part came from other places where the fruit was said to be superior." (*Elwood.*)

44245. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

From Cristobal, Canal Zone. Presented by Mr. O. W. Barrett. Received March 14, 1917.

"Seeds from ripe fruits of the so-called bush (i. e., jungle) variety which bears more or less wrinkled berries of 15 to 25 mm. in diameter; the plant is very loosely branched, 50 to 75 cm. or more high, and it appears to resist the *Bacillus solanacearum* very well." (*Barrett.*)

44246. PYRUS USSURIENSIS Maxim. Malaceæ. **Pear.**

From Charles City, Iowa. Scions presented by Mr. Charles G. Patten. Received March 6, 1917.

"In Grundy Center, Iowa, there is a pear tree growing which endured the extremely cold winters of 1883, 1884, and 1885. This pear is owned by Mr. O. A. Bardhall, a tailor, and was imported from China as a Chinese sand pear by John S. Collins & Sons, of New Jersey, and was supposed by them to bear pears nearly the size of Flemish Beauty, but only of cooking quality. The extreme hardiness of the tree appealed to Mr. Charles G. Patten, of Charles City, Iowa, who planted one in his orchard in 1885, and the following year planted two in an isolated orchard on his farm. The second year after that the tree bore fruit, but on account of its early blooming and consequent lack of pollination bore only a very scanty number of very small, green-colored, hard pears, from which but few seeds were saved. There are in Charles City some 200 seedling pear trees, products of crosses of the Longworth, Seckel, and Chinese sand varieties." (Adapted from *Charles G. Patten*, in *Report of the Iowa State Horticultural Society for the Year 1912, p. 162.*)

44247 to 44249.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 6, 1917.

44247. ALLIUM FISTULOSUM L. Liliaceæ. **Leek.**

"(No. 137b. Ansuhsien, Chihli Province, China, January 18, 1917.) *Ta t'ou ts'ung*, meaning 'large-headed leek.' One specimen of a peculiar, short variety of winter leek." (*Meyer.*)

44247 to 44249—Continued.

44248. ALLIUM SATIVUM L. Liliaceæ. **Garlic.**

"(No. 138b. Ansuhsien, Chihli Province, China, January 18, 1917.) *Suan.* Bulbs of the first-quality Chinese garlic, extensively used by the people raw, boiled, and pickled as health promoters. They are said to prevent ptomaine poisoning through the action of the strong antiseptic oil they contain. These bulbs sell locally at two for 1 cent (Mex.)." (*Meyer.*)

44249. CHAENOMELES LAGENARIA CATHAYENSIS (Hemsl.) Rehder. Malaceæ. **Chinese quince.**
(*Cydonia cathayensis* Hemsl.)

"(No. 139b. Peking, China, January 27, 1917.) *Mu kwa*, meaning 'wooden gourd,' the shape suggesting to the Chinese a gourd. The Chinese quince is much used in winter as a room perfumer by the better class of Chinese. These fruits are said to have come from Anhwei Province. Plants raised from the seeds should be tested as a stock for pears and loquats. Experiments might be made also concerning its susceptibility to blight." (*Meyer.*)

44250. MYRIANTHUS ARBOREUS Beauv. Moraceæ.

From Loanda, Angola, Africa. Presented by Mr. J. Gossweiler. Received March 6, 1917.

A tree, native of tropical Africa, with large entire or three to five lobed leaves with prominent stipules. The male flowers are borne on thick, branching receptacles, and the female flowers appear in solitary headlike inflorescences. The fleshy fruits are edible. (Adapted from *A. Engler, Die Pflanzenwelt Ost-Africas, part C, p. 162.*)

44251 and 44252.

From Bogota, Colombia. Presented by Mr. George E. Child. Received March 12, 1917.

44251. ANNONA CHERIMOLA Mill. Annonaceæ. **Cherimoya.**

"It is always worth while to test new strains of the cherimoya, particularly when they are obtained from high altitudes, as this one appears to be. The aim of subtropical horticulturists at the present time is to secure a variety which will be reasonably hardy and prolific in bearing, with a fruit of good quality. To this end we need to plant seed from all parts of tropical America where the cherimoya is grown." (*Popenoe.*)

44252. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

"The avocados of Colombia are scarcely known in the United States. A few fruits of the West Indian race have reached the markets of New York from Colombian ports, but we know very little regarding the races or varieties of the highlands. Some very remarkable young seedlings have been grown in Florida from seed of Colombian origin. It is possible that we shall obtain from that country new races or varieties of considerable value." (*Popenoe.*)

44253 to 44266. AMYGDALUS spp. Amygdalaceæ. **Peach.**

From China. Procured from Mr. Thomas Sammons, American consul general, Shanghai. Received March 12, 1917.

"Seeds procured in the region of Kiangyin, Kiangsu Province, by the agent of the Rev. Lacy L. Little. The following directions for the planting and care of peach trees were furnished by a native peach grower who is thoroughly conversant with the native methods of peach culture.

"The seeds must first be soaked in water and kept therein until the water becomes stale. They should then be taken out and planted, covering them with a thin coating of earth. They should be kept moist with a mixture of wine dregs and water until they sprout. Should worms be discovered in the fruit, the earth should be drawn away from the tree where it emerges from the ground and an old straw sandal (one that has been worn), having been first soaked in urine, should be wrapped around the part of the tree from which the earth has been removed. After this it should be fertilized at intervals with household excrement." (*Sammons.*)

44253 to 44265. AMYGDALUS PERSICA L.
(*Prunus persica* Stokes.)

44253. "*Autumn half-pound* peach. Ripens in the autumn. Round and unusually large. Sometimes weighs more than a half pound. White, freestone. Exceedingly fine flavor. Should be carefully looked after." (*Native peach grower.*)

44254. "*Shiny gray* peach. Ripens in August. Oblong in shape; color reddish purple. Flavor sweet, with slight acid taste." (*Native peach grower.*)

44255. "*Nanking red* peach. Ripens about the middle of May. Round and pointed; color reddish white. Flavor sweet, slightly acid. Has a great reputation at Soochow, in Kiangsu Province." (*Native peach grower.*)

44256. "*Watery honey* peach. This peach was first planted in Shanghai, in the Lushang Gardens, in the Da Ts'ing dynasty, in the years known as Ien Fong and Dong Z. Although these gardens are no longer in existence, the seeds of this peach are still to be found along the Yangtse River. It has a peculiarly fine flavor." (*Native peach grower.*)

44257. "*Large fuzzy* peach. Ripens the last of August. Round in shape. Color green; has a fuzzy skin. Wait until it is fully ripe before gathering." (*Native peach grower.*)

44258. "*June red* peach. Ripens in June. Round; color whitish green; skin is unusually thick. Excellent flavor." (*Native peach grower.*)

44259. "*Early summer* peach. Ripens about the middle of July. Shaped somewhat like a pear; color reddish green, flavor sweet." (*Native peach grower.*)

44260. "*Watery white* peach. Ripens about the middle of July. Large and round, pointed somewhat like a pear; color white, surface smooth, flavor fine." (*Native peach grower.*)

44261. "*Shiny plum* peach. Ripens in July and August. Oblong in shape, color purplish green and shiny. Flavor very fine." (*Native peach grower.*)

44262. "*August white* peach. Ripens about the middle of August. Round and pointed. White with greenish tinge. Best flavor when thoroughly ripe." (*Native peach grower.*)

44253 to 44266—Continued.

44263. "*Rainy season* peach. Ripens in the latter part of May (the Chinese rainy season). Round and pointed; slightly red at the point; flavor sweet and good." (*Native peach grower.*)

44264. "*July white* peach. Ripens in the middle of July. Round and pointed; skin soft and thin. Color white with greenish tinge. Flavor delicious." (*Native peach grower.*)

44265. Mixed seed of the foregoing twelve varieties (Nos. 44253 to 44264.)

44266. Amygdalus persica platycarpa (Decaisne) Ricker.
(*Prunus persica platycarpa* Bailey.)

"Flat peach. Ripens about the middle of August. Round and flat; color greenish white. Fuzz fine and thick." (*Native peach grower.*)

44267 and 44268.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received March 7, 1917.

44267. Coccolobis sp. Polygonaceæ.

A plant allied to the sea grape, or *jarra*, of the West Indies.

44268. Guilielma utilis Oerst. Phœnicaceæ. **Pejibaya palm.**
(*Bactris utilis* Benth. and Hook.)

"This palm, commonly called *pejibaya*, grows in the hot humid sections of Costa Rica, more abundantly on the Atlantic slope. The Indians have cultivated it since remote times, and it is not known in the wild state. The trunk reaches a height of 8 meters and is covered with sharp thin spines disposed in circular zones. The leaves are pinnate, dark green in color. The flowers are yellow, very much sought after by insects. They form short racemes protected by a bristled spathe. The fruits reach the size of a small peach and in the larger number of varieties are red, the other sort being yellow. The seed is inclosed in a sweet farinaceous pulp that is cooked and eaten. It has a flavor much like that of the chestnut and is a favorite food of the town people. The wood is very hard and is used by the Indians for walking sticks, arrow points, bows, pikes, and for all purposes where strength and durability are required. The name *pejibaya* is probably South American with the variations *pejiballe, pijibay, pixbae, pixbay.*" (*C. B. Doyle.*)

44269 to 44272.

From Curacao, Dutch West Indies. Seeds collected by Mr. H. M. Curran. Received March 16, 1917.

44269. Cephalocereus lanuginosus (L.) Britt. and Rose. Cactaceæ. **Cactus.**

"Edible fruit. March 1, 1917." (*Curran.*)

44270. Coccolobis diversifolia Jacq. Polygonaceæ.

"*Kamalia.* Edible fruit. March 6, 1917." (*Curran.*)

A West Indian tree 2 to 10 meters in height, with ovate leaves 7 to 14 cm. long, spicate inflorescences of green flowers, and ovoid, brown fruits about 1 cm. long containing round, brownish green seeds. (Adapted from *Engler, Botanische Jahrbücher, vol. 13, p. 149,* as *Coccoloba barbadensis.*)

44269 to 44272—Continued.

44271. Ipomoea sp. Convolvulaceæ.

An ornamental vine allied to our morning-glory.

44272. Sesban sp. Fabaceæ.

"Perennial leguminous plant in low lands, March 6, 1917." (*Curran.*)

44273. Psychotria bacteriophila Valet. Rubiaceæ.

From Buitenzorg, Java. Presented by the director, Jardin Botanique. Received March 19, 1917.

See S. P. I. No. 44119 for previous introduction and description.

For notes on the interesting phenomenon of bacterial leaf nodules in Rubiaceous plants, see S. P. I. No. 44295.

44274 to 44288.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 19, 1917.

44274 and 44275. Pyrus spp. Maxim. Malaceæ. Pear.

44274. Pyrus ussuriensis Maxim.

"(No. 2360a. Tsunhwachow, Chihli Province, China, December 9, 1916.) *Ta suan li*, meaning 'big sour pear.'" (*Meyer.*)

Scions received under No. 1272 [S. P. I. No. 44169], which see for description.

44275. Pyrus ussuriensis Maxim.

"(No. 2361a. Tsunhwachow, Chihli Province, China, December 9, 1916.) *Hung hua kuan li*, meaning 'red-flowered pear.' A small variety of pear, of round, flattened shape with very long peduncle (twice the diameter of the fruit). Calyx persistent; color on top dull red, at base greenish yellow. Flesh of watery sweet taste, becoming soft later on. Probably a hybrid and possibly immune to fire-blight." (*Meyer.*)

44276. Pyrus sp.

"(No. 2362a. Peking, China, November 4, 1916.) *T'ou li*, meaning 'joining pear,' which name also is given to *Pyrus betulaefolia*, in which case it has reference to the fact that this last one is used extensively as a joining (i. e., grafting) stock. This number, however, is quite a different pear and may prove to be a new species. A small pear, the size of a crab apple, of russet color, with a very long peduncle and a deciduous calyx. Flesh soon becoming soft and mealy and decaying quickly." (*Meyer.*)

44277. Pyrus sp.

"(No. 2363a. Peking, China, December 15, 1916.) *Shui pai li*, meaning 'water white pear.' A variety of Chinese pear of yellow color; medium size; of round-oval shape; peduncle medium long; calyx persistent. Meat firm and sweet, but a trifle coarse. A rare variety." (*Meyer.*)

44278. Pyrus ussuriensis Maxim.

"(No. 2364a. Peking, China, December 19, 1916.) The well-known white pear, or 'Pai li,' which is among the pears most appreciated by foreign residents in North China. The fruits are of apple shape, of pale

44274 to 44288—Continued.

waxy-yellow color, and the flesh of a fresh, sweet taste after they have become soft. Some of the fruits have persistent calyxes, while others have deciduous ones." (*Meyer.*)

Received as *Pyrus simonii*, which is now referred to the above species by Mr. Rehder.

44279. PYRUS LINDLEYI Rehder.
(*P. sinensis* Lindl.)

"(No. 2365a. Malanyu, Chihli Province, China, November 25, 1916.) *P'in li*, meaning 'apple pear.' A variety of pear of russet-brown color and of flat, apple shape, though some specimens are of elongated form and taper down toward the base; calyx deciduous; peduncle medium long; flesh firm and juicy, but not sweet. A long-time keeper and a good shipper; can be used by occidentals as a cooking pear." (*Meyer.*)

44280. PYRUS spp.

"(No. 2366a. North China, November and December, 1916.) Mixed varieties of cultivated pears; to be tested as regards degree of immunity to pear-blight." (*Meyer.*)

44281 to 44283. MALUS spp. Malaceæ.

44281. MALUS SPECTABILIS (Ait.) Borkh. **Flowering crab apple.**
(*Pyrus spectabilis* Ait.)

"(No. 2367a. Peking, China, November 3, 1916.) *Hai tan kuo*, meaning 'sea red fruit,' implying that the plant came to North China by the sea route, probably from central China. A flowering crab apple, resistant to the drought and alkali of North Chinese soils. The small, greenish white fruits, which are of no value, have a persistent calyx. To be sown in order to obtain new types." (*Meyer.*)

44282. MALUS sp. **Apple.**

"(No. 2368a. Peking, China, December 15, 1916.) *Ch'iu kuo*, meaning 'autumn fruit.' A small Chinese apple, of very dark-red color with bluish bloom. Calyx persistent; peduncle medium long; contains but few seeds. Flesh mealy and without flavor. Withstands dry air and a fair amount of alkali in soil and water." (*Meyer.*)

44283. MALUS BACCATA (L.) Moench. **Crab apple.**
(*Pyrus baccata* L.)

"(No. 2369a. Peking, China, December 15, 1916.) *Hai tan kuo*, meaning 'sea red fruit.' A medium-sized crab apple, of bright-red color and of pleasant, sour taste. Calyx deciduous; peduncle medium long. Much used in North China as a preserve. This variety seems to be able to stand considerable drought and alkali and may be of value in breeding experiments in the upper Mississippi Valley." (*Meyer.*)

44284. NICOTIANA TABACUM L. Solanaceæ. **Tobacco.**

"(No. 2370a. Malanyu, Chihli Province, China, November 27, 1916.) *Yen.* A variety of tobacco considered locally to be very good. To be tested for nicotine content." (*Meyer.*)

44285. INDIGOFERA KIRILOWII Maxim. Fabaceæ.

"(No. 2371a. Shinglungshan, Chihli Province, China, December 3, 1916.) A low-growing leguminous shrub, with pretty rose-colored flowers; occurring on decomposed rocky mountain slopes, often in partial shade. Fit to be employed as a rockery shrub." (*Meyer.*)

44274 to 44288—Continued.

44286. ULMUS PARVIFOLIA Jacq. Ulmaceæ. **Elm.**

"(No. 2372a. Near Shihtaoyin, Chihli Province, China, December 1, 1916.) An autumn-flowering elm, found in a locality farther north than one generally meets with this species." (*Meyer.*)

44287. CHRYSANTHEMUM INDICUM L. Asteraceæ. **Chrysanthemum.**

"(No. 2373a. Malanyu, Chihli Province, China, November 30, 1916.) A wild, perennial chrysanthemum, producing masses of small, golden-yellow flowers late in the fall. The plant is well worth growing on dry banks and in large rockeries; it requires partial shade to do best. Deserves to be naturalized in a locality like Colorado Springs." (*Meyer.*)

44288. SPODIOPOGON SIBIRICUS Trin. Poaceæ. **Grass.**

"(No. 2374a. Shinglungshan, Chihli Province, China, December 3, 1916.) A perennial grass, 2 to 3 feet high, occurring on mountain slopes on decomposed porphyritic rock in partial shade. Possibly of forage value in Rocky Mountain localities." (*Meyer.*)

44289. THUNBERGIA GIBSONI S. Moore. Acanthaceæ.

From Lawang, Java. Presented by Mr. M. Buysman. Received March 19, 1917.

An ornamental climbing shrub native to tropical East Africa. It flowers profusely, the corolla being of clear or deep-orange color and having a waxy texture. The plant is said to grow well under ordinary greenhouse conditions. (Adapted from *Gardeners' Chronicle, May 1, 1915.*)

"Seeds of a plant often discussed in the Gardeners' Chronicle, but never brought into commerce. It is doubtless the finest species of the genus." (*Buysman.*)

44290. MANGIFERA CAESIA Jack. Anacardiaceæ.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received March 19, 1917.

Binjai. A large, stately tree, native of the Malay Archipelago, with alternate wedge-shaped or elliptic leathery leaves 6 to 16 inches long; stout, much-branched panicles of purplish flowers, and oblong or ovoid fruits, which are eaten by the natives but are said to be very poor. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, pp. 1894–1895.*)

44291 to 44294.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 6, 1917.

44291. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

"(No. 2375a. Ansuhsien, Chihli Province, China, January 18, 1917.) *Pan ch'ing pan, pan pai ts'ai,* meaning 'half green, half white pai ts'ai,' on account of the outer leaves being green while the center is white. A fine quality of heavy winter *pai ts'ai*, coming from a locality famous for its cabbage and formerly supplying the Imperial Court at Peking. This *pai ts'ai* has a sweet, wholesome flavor, is quite juicy, but not watery, like most other varieties. After having been boiled once it can be warmed up again three successive days without losing its fine taste. The plants are transplanted three times before being put out in their permanent places. They need a rich porous soil and plenty of water while growing fast. In good seasons specimens are obtained that weigh between 30 and 40 pounds apiece." (*Meyer.*)

44291 to 44294—Continued.

44292. Brassica pekinensis (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

"(No. 2376a. Ansuhsien, Chihli Province, China, January 18, 1917.) *Pai ts'ai*, meaning 'white vegetable.' A heavy quality of white winter *pai ts'ai*, much in demand and generally disposed of by the growers to private customers before the end of December. Needs a rich soil and no lack of moisture to become tender and sweet." (*Meyer.*)

44293. Raphanus sativus L. Brassicaceæ. **Radish.**

"(No. 2377a. Ansuhsien, Chihli Province, China, January 18, 1917.) *Teng lung hung lo po*, meaning 'lantern red root,' referring to the resemblance of the root to a Chinese or Japanese flat lantern. A large, flat red, winter radish, said to grow as heavy as 5 catties apiece. Needs rich, well-drained soil to do well. Sow out in summer, not in spring." (*Meyer.*)

44294. Allium fistulosum L. Liliaceæ. **Leek.**

"(No. 2378a. Ansuhsien, Chihli Province, China, January 18, 1917.) *Ta t'ou st'ung*, meaning 'large-headed leek.' A peculiar variety of Chinese winter leek of very short growth, looking almost like a slender onion. Said to be of very good flavor; possesses also good shipping and keeping qualities. Does best in light, rich, moisture-retaining soil." (*Meyer.*)

44295. Pavetta zimmermanniana Valet. Rubiaceæ.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received March 19, 1917.

A small rubiaceous tree or shrub, with opposite, nearly elliptic leaves and clusters of small slender-tubed white flowers.

"The remarkable researches of Zimmerman and Faber detailed in the Jahrbücher für Wissenschaftliche Botanik, vol. 51, p. 285, 1912, and vol. 54, p. 243, 1914, make this species of unusual interest. Faber has proved that the leaves of this and of several other species of Pavetta, Psychotria, and possibly other genera of the Rubiaceæ contain colonies of a nonmotile, nitrogen-fixing bacterium which he names *Myco-bacterium rubiacearum.* The bacteria of this species almost invariably inhabit the micropyle of the young seed and when the seed germinates grow through certain stomata of the very young leaves and into the intracellular spaces formed in the leaf tissues around these stomata. Cavities are formed through the growth of the epidermal cells which later close entirely and make bacterial nodules which are deeply embedded in the leaf tissues. A single leaf may have several dozen of these symbiotic bacterial nodules.

"Faber was able, by treating the seeds with hot water and a sublimate solution, to kill the inhabiting myco-bacteria and, later, to infect part of the seedlings grown from these seeds with pure cultures of the bacterium. The artificially infected seedlings grown in soil free from combined nitrogen grew well and remained healthy for four months, whereas those not so infected turned yellowish white and died in three or four weeks. The plants from unsterilized seeds produced leaves bearing many more bacterial nodules than did those from sterilized seeds which were later artificially inoculated. In view of the fact that these rubiaceous plants with bacterial nodule-bearing leaves occur in many parts of the Tropics and that in India, at least, the value of their leaves for manure has long been recognized, and considering the value of nitrogen-fixing legumes as fertilizers, the suggestion of Faber that we may have in these trees and shrubs plants of positive agricultural value for the tropical planter is well worthy of consideration. The value of the mulch formed by the leaves of leguminous and other plants is keenly appreciated by the best cultivators; and it may be possible to find suitable small shrubs of Pavetta or other rubiaceous plants which will be worth while growing for their nitrogen-fixing leaf bacteria in the orchards of our semitropics or wherever else the climate will permit their cultivation." (*David Fairchild.*)

44296 to 44311.[1] PRUNUS SERRULATA Lindl. Amygdalaceæ.
Flowering cherry.

From Yokohama, Japan. Scions purchased from the Yokohama Nursery Co. Received February 27, 1917.

44296. *Kirin;* late flowering, with large, very double, rose-colored flowers; one of the best. Considered by Wilson a form of *Prunus serrulata sachalinensis* and by Miyoshi forma *atrorubra* of *P. serrulata.*

44297. *Taki-nioi;* very fragrant, single, white flowers; called by Miyoshi forma *cataracta* of *Prunus serrulata* and by Wilson forma *cataracta* of *P. lannesiana.*

44298. *Shōgetsu;* a rather late, good variety with very large, long-pediciled, double, pale-pink flowers; called by Wilson forma *superba* of *Prunus serrulata sachalinensis* and by Miyoshi the same form of *P. serrulata.*

44299. *Kan-zakura;* a curious Japanese cherry from the vicinity of Tokyo, with single, pale-pink flowers which appear in late winter. It is now being cultivated in the Arnold Arboretum. (Adapted from *Wilson, The Cherries of Japan, p. 31,* as *P. serrulata,* var. *spontanea,* forma *praecox.*)

44300. *Minakami;* flowers very fragrant, white, single or nearly so; placed by Wilson under forma *donarium* of *Prunus lannesiana* and by Miyoshi under forma *glauca* of *P. serrulata.*

44301. *Kokonye;* flowers pink, double or semidouble, long pediceled and usually short peduncled. Considered by Wilson forma *homogena* of *Prunus serrulata sachalinensis,* while Miyoshi considered it a form of *P. serrulata.*

44302. *Ranzan;* a very pleasing form with single pink flowers on long slender pedicels. Considered by Wilson a form of *Prunus lannesiana.*

44303. *Yae-akebono;* flowers very large, fragrant, semidouble, soft pink, very beautiful; called by Wilson forma *versicolor* of *Prunus lannesiana* and by Miyoshi the same form of *P. serrulata.*

44304. *Gyciko;* semidouble flowers, pale yellow with greenish stripes, three flowered; considered by Wilson a form of *Prunus lannesiana* and by Miyoshi as forma *tricolor* of *P. serrulata.*

44305. *Horinji;* a small tree with dark-gray twigs, yellowish brown young leaves, and flowers with roundish petals, the outer rank pink, the inner rank white. Blossoming time from the middle to the end of April. (Adapted from *Miyoshi, "Japanische Bergkirschen," Journal of*

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[1] See footnote, p. 11.

44296 to 44311—Continued.

the College of Science, Tokyo, vol. 34, art. 1, p. 110, as *Prunus serrulata* Lindl. forma *decora.*)

"This is a very beautiful form, with clusters of pale pink double or semidouble flowers." (*Wilson, The Cherries of Japan, p. 40, as Prunus serrulata,* var. *sachalinensis* forma *horinji.*)

44306. *Hitoye-fudanzakura;* a precocious form, which blooms in almost any season; single flowers, white or nearly so, of little horticultural value; considered by Wilson a form of *Prunus lannesiana.*

44307. *Asagi.* A Japanese cherry from Kohoku, with greenish white flowers tinged with pink, about 4 cm. in width, occurring in two to four flowered clusters. (Adapted from *Miyoshi, "Japanische Bergkirschen," Journal of the College of Science, Imperial University of Tokyo, vol. 34, pp. 124–125.*)

Called by Miyoshi, *Prunus serrulata,* subforma *luteoides* Miyoshi.

Received as *Asagi-zakura,* but no mention of this name is made in the above publication or in Wilson, The Cherries of Japan.

44308. *Botan-zakura;* one of the very best forms bearing very large, pale-pink, fragrant, semidouble flowers, called by Wilson forma *moutan* of *Prunus lannesiana* and by Miyoshi the same form of *P. serrulata.*

44309. *Surugadai-nioi.* A moderately large tree with brown-gray twigs, brownish red young leaves, and white, fragrant flowers. Blossoming time about the end of April. (Adapted from *Miyoshi, "Japanische Bergkirschen," Journal of the College of Science, Tokyo, vol. 34, art. 1, p. 132,* as *Prunus serrulata* Lindl. forma *surugadai-odora.*)

"Flowers semidouble, fragrant, nearly white, pendulous on long slender pedicels. This is a late-flowering form." (*Wilson, The Cherries of Japan, p. 51,* as *Prunus lannesiana* forma *surugadaiodora.*)

44310. *Shirayuki.* A moderately large tree with numerous closely crowded erect-spreading branches, smooth brown-gray twigs, yellowish brown young leaves, and white flowers with hairy penduncles. Blossoming time mid-April. (Adapted from *Miyoshi, "Japanische Bergkirschen," Journal of the College of Science, Tokyo, vol. 34, art. 1, p. 127,* as *Prunus serrulata* Lindl. forma *nivea.*)

"With its large flowers, this distinct form resembles *Prunus yedoensis* Matsumura, but the bracteoles show that it belongs to *P. serrulata* Lindl. . . . The branches are erect spreading and the flowers white, single or nearly so." (*Wilson, The Cherries of Japan, p. 34,* as *P. serrulata* var. *pubescens* forma *sirayuki.*)

44311. *Udzu-zakura;* a good form; produces near ends of branches pink, double flowers, with short peduncles and long pedicels. Called by Miyoshi forma *spiralis* of *Prunus serrulata* and by Wilson the same form of *P. serrulata sachalinensis.*

44312 to 44318.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 20, 1917.

44312. Brassica pekinensis (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

"(No. 2379a. Peking, China, February 5, 1917.) A medium-large, very solid, white, winter *pai ts'ai,* possessing excellent keeping qualities. Needs rich, friable soil to thrive well." (*Meyer.*)

44312 to 44318—Continued.

44313 to 44315. Allium fistulosum L. Liliaceæ. **Leek.**

44313. "(No. 2380a. Peking, China, February 5, 1917.) *Chi t'ui ts'ung*, meaning 'chicken-leg leek.' A short variety of winter leek; very firm and juicy." (*Meyer.*)

44314. "(No. 2381a. Peking, China, February 5, 1917.) *Kao chio pai ts'ung*, meaning 'tall-horn white leek.' A long, heavy variety of winter leek; a good keeper; stands repeated freezing and thawing." (*Meyer.*)

44315. "(No. 2382a. Peking, China, February 5, 1917.) *Pai lu ts'ung*, meaning 'frost-festival leek.' A medium long variety of winter leek." (*Meyer.*)

44316 to 44318. Brassica spp. Brassicaceæ. **Mustard.**

"*Chieh.* Mustard seed, such as is used in Peking to make ground table mustard. It is cultivated a few days' journey to the northwest of Peking in a region with cool nights in summer, a climate resembling that of the intermountain sections of the United States.

44316. "(No. 140b. Peking, China, February 5, 1917.) Price of this sample 28 cents in Yuan silver per catty." (*Meyer.*)

Received as *Brassica juncea*, but it is apparently not that species.

44317. "(No. 141b. Peking, China, February 10, 1917.) Price of this sample 26 cents in Yuan silver per catty." (*Meyer.*)

44318. "(No. 143b. Peking, China, February 10, 1917.) Price of this sample 24 cents in Yuan silver per catty." (*Meyer.*)

44319. Opuntia sp. Cactaceæ. **Prickly-pear.**

From Curacao, Dutch West Indies. Cuttings presented by Mr. H. M. Curran. Received March, 1917.

"Spineless form. March 1, 1917." (*Curran.*)

44320 to 44325.

From Richmond, Victoria, Australia. Seeds presented by Mr. F. H. Baker. Received March 7, 1917.

44320 to 44323. Acacia spp. Mimosaceæ. **Wattle.**

"In sowing acacia seed they should have boiling water poured over them and should be allowed to stand for 24 hours. Do not use any manure, and sow them in the poorest soil." (*Baker.*)

44320. Acacia diffusa Lindl.

"Prickly acacia; good bloomer." (*Baker.*)

A straggling shrub, native of New South Wales, Australia, with loosely scattered, sessile, linear leaves about an inch long and yellow flowers in axillary heads about the size of a pea. (Adapted from the *Botanical Register, vol. 8, pl. 634.*)

44321. Acacia implexa Benth.

"A fine, stately tree." (*Baker.*)

A tall Australian tree, 50 feet high, with light-green sickle-shaped lanceolate leaves 6 to 7 inches long, cream-colored flowers in short

44320 to 44325—Continued.

racemes, and light-brown pods, curved like an interrogation mark, 4 to 6 inches long. The dark-brown, hard, close-grained wood is much used for turnery and for all purposes which call for tenacity and strength. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 185,* and from *Maiden, Native Useful Plants of Australia, p. 357.*)

44322. Acacia leprosa Sieber.

"A beautiful wattle; always weeping; a good bloomer." (*Baker.*)

An Australian shrub with erect, slender branches; linear or lance-shaped sicklelike leaves covered with very small patches of whitish matter exuded through the epidermis, and pale yellow flowers in clustering heads. The whitish patches on the leaves give the plant a gray, powdery appearance; hence its name. (Adapted from the *Botanical Register, vol. 17, pl. 1441.*)

44323. Acacia pycnantha Benth.

A small tree, native of southern Australia, with lanceolate or oblong leaves 2½ to 6 inches long and showy, fragrant, yellow flowers in simple or compound racemes. The pods are 2 to 5 inches long. The bark contains the highest percentage of tannin of any of the species; a good gum exudes from the trees; and the tree itself is used as a sand binder. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 184.*)

44324. Candollea graminifolia (Swartz) F. Muell. Candolleaceæ.
(*Stylidium graminifolium* Swartz.)

A glabrous Australian perennial with a short tufted stem rarely lengthening to 4 or 5 inches and linear, rather rigid, flattened leaves usually 2 but at times 6 to 9 inches long. The scapes are up to 1½ feet high, the upper quarter or half being occupied by a narrow, simple raceme or interrupted spike of pink flowers. The oval capsules are a quarter to half an inch long. (Adapted from *Bentham, Flora Australiensis, vol. 4, p. 10.*)

44325. Kennedya monophylla Vent. Fabaceæ.
(*Hardenbergia monophylla* Benth.)

A trailing herb, native of southern Australia, with leaves consisting of one ovate or lance-shaped leaflet 2 to 4 inches long, violet flowers nearly half an inch long in few-flowered racemes, and flat papery pods about 1½ inches long. (Adapted from *Bailey, Queensland Flora, pt. 2, p. 424.*)

44326 to 44330. Saccharum officinarum L. Poaceæ.

Sugar cane.

From Kingston, Jamaica. Cuttings presented by Mr. William Harris, Superintendent of Public Gardens. Received March 12, 1917.

"Jamaica seedlings raised at our experiment station." (*Harris.*)

44326. No. 70.
44327. No. 71.
44328. No. 72.
44329. No. 73.
44330. No. 74.

44331 and 44332. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Cienfuegos, Cuba. Cuttings presented by Mr. Robert M. Grey, Harvard Experiment Station. Received March 13, 1917.

44331. *Demerara 74.* 44332. *Demerara 95.*

44333. PYRUS CALLERYANA Decaisne. Malaceæ. **Pear.**

From Hongkong, China. Grafts presented by Mr. W. T. Tutcher, superintendent, Botanical and Forestry Department. Received March 14, 1917.

See S. P. I. No. 43987 for previous introduction and description.

44334. PONCIRUS TRIFOLIATA (L.) Raf. Rutaceæ. (*Citrus trifoliata* L.) **Trifoliate orange.**

From Taiku, Korea. Sprouts presented by Rev. James E. Adams, Korean Mission. Received March 19, 1917.

A shrub or small tree used extensively as a hedge plant in our Southern States, where it is quite hardy.

44335. ILEX MACROPHYLLA Wall. Aquifoliaceæ. **Holly.**

From Pisa, Italy. Seed presented by the director, Botanic Garden. Received March 23, 1917.

A tree, native of Java and Sumatra, about 15 feet high, with gray bark, rigid, shining leaves 4 to 7 inches long, flowers in branched cymes, and round drupes containing about eight stones. (Adapted from *Hooker, Flora of British India, vol. 1, pp. 604–605.*)

44336. CACARA EROSA (L.) Kuntze. Fabaceæ. **Yam bean.** (*Pachyrhizus angulatus* Rich.)

From Kingston, Jamaica. Seed presented by Mr. William Harris, Superintendent of Public Gardens. Received March 23, 1917.

A shrubby, climbing, leguminous plant with large edible roots that also produce a valuable starch.

See S. P. I. Nos. 22971 and 33258 for previous introductions.

44337. CUCUMIS MELO L. Cucurbitaceæ. **Melon.**

From Baku, Russia. Seed presented by Mr. Roy G. Pierce, Forest Pathologist, who secured them from Mr. Arthur Knapp. Received March 24, 1917.

"Seeds from a melon called a *denya,* which is grown in the Trans-Caucasus. The melon is yellow and very like the California *cassaba* melon. The remarkable thing about this melon is that if it is hung up in a cool place it will keep for a year." (*Knapp.*)

44338. ANANAS SATIVUS Schult. f. Bromeliaceæ. **Pineapple.**

From Antigua, West Indies. Plants purchased from Mr. J. Jackson, curator and superintendent, Agricultural Department. Received March 15, 1917.

White Antigua pineapple. A medium-sized pineapple. It is light colored, oblong in shape, with a quality better than the average. It is used as a dessert and for general kitchen purposes. (Adapted from *Bulletin No. 8, Division of Pomology, U. S. Department of Agriculture.*)

44339 to 44343.

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Gardens. Received March 19, 1917.

44339. Berberis sp. Berberidaceæ. **Barberry.**

Received as *Berberis vilmoriniana*, for which a place of publication has not yet been found.

See S. P. I. Nos. 33024, 40139, and 42184 for previous introduction.

44340. Malus niedzwetskyana Dieck. Malaceæ. **Apple.**

A tree, native of southwestern Siberia, resembling the common apple in habit, with reddish tinged young wood and young leaves, large clusters of deep-pink flowers, and dark-red conical apples with purplish flesh. The attractive coloring of the wood, leaves, and fruit makes this an especially ornamental species. (Adapted from *The Garden, May 22, 1915*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2871*, as *Pyrus malus niedzwetskyana.*)

44341. Sorbus koehneana C. Schneid. Malaceæ.

A shrub, native to central China, up to 4 meters (13 feet) in height, with generally smooth, compound leaves from 8 to 15.5 cm. long; white flowers, usually on the very short lateral branches; and round white fruits, about 7 or 8 mm. in diameter. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, pp. 471–472.*)

44342. × Sorbus meinichii (Lindeb.) Hedl. Malaceæ.

A hybrid tree, whose parents are *Sorbus aucuparia* and *S. hybrida*. It is a native of the island of Åland and the neighboring islands and has compound, serrate leaves. (Adapted from *Hedlund, Monographie der Gattung Sorbus, pp. 49–50.*)

44343. Sorbus vilmorini C. Schneid. Malaceæ.

A large shrub or small tree, native of western China, with attractive, pinnate leaves; white flowers about a quarter of an inch in diameter, in corymbs appearing in June; and pale rosy-red fruits. In summer and also in autumn this is a most attractive Sorbus. (Adapted from *The Garden, September 2, 1916.*)

44344. Achras zapota L. Sapotaceæ. **Sapodilla.**

(*A. sapota* L.)

From Bokeelia, Fla. Seed presented by Mr. Harry P. Johnson. Received March 24, 1917.

"Seeds of the largest sapodilla fruit I have ever seen; grown on my place here. As large as a big orange." (*Johnson.*)

44345. Inodes exul O. F. Cook. Phœnicaceæ. **Palmetto.**

From San Antonio, Tex. Seed presented by Mr. C. R. Letteer, San Antonio Experiment Farm. Received March 26, 1917.

"Collected at Victoria, Tex., in 1912." (*Letteer.*)

A large palmetto, cultivated in Texas, with deep-green foliage, solitary fruits, and large seeds not wrinkled above. (Adapted from *Circular 113, Bureau of Plant Industry, pp. 11–14.*)

See also S. P. I. No. 35116 for further description.

44346. Lucuma sp. Sapotaceæ.

From El Coyolar, Costa Rica. Seed presented by Mr. Carlos Wercklé. Received March 7, 1917.

"Seeds of the apple-shaped *nispero sapotilla.* Better than *Vitellaria multiflora;* flesh of the same consistency and appearance, but more highly colored." (*Wercklé.*)

44347 to 44356.

From Maidstone, England. Plants presented by George Bunyard & Co.. Ltd. Received March 29, 1917. Quoted notes from Bunyard's Catalogue.

44347 to 44349.[1] Ribes vulgare Lam. Grossulariaceæ. **Garden currant.**

44347. "*Moore's Ruby.* Berries medium size. Midseason. Growth very upright; very fertile; a hardy and desirable sort. Raised by Judge Moore, U. S. A."

44348. "*Skinner's Early.* Berries medium, bright red; bunches long, very fertile; growth vigorous, upright. The earliest of all; most valuable for market. This variety is esteemed in Kent and is named after a local grower, but is quite possibly the old sort renamed."

44349. "*Utrecht.* Berries medium, dark red; bunches medium; growth vigorous, upright; leaves resembling *Scotch* but distinct. A useful midseason variety, origin probably indicated by its name."

44350 to 44356. Corylus avellana L. Betulaceæ. **Filbert.**

44350. "*Cosford.* Nut almost round, large, most excellent flavor, and very thin shell. A prolific variety, and recommended as a pollenizer for filberts of less fertile sorts. Possibly originated in Suffolk, where there is a hundred of *Cosford.*"

44351. "*Duke of Edinburgh.* Nut large, oblong; shell rather thick; of excellent flavor; quite one of the best flavored. Raised by Mr. Webb, of Calcot, and certificated by the Royal Horticultural Society in 1883."

44352. "*Kentish Cob.* Nut large, broad and long, excellent flavor; prolific; the best for all-round use. Almost exclusively grown in Kent for market work. Raised by Mr. Lambert, of Cloudhurst, Kent, about 1830; hence its synonym '*Lambert's*' filbert."

44353. "*Merveille de Bolwyller.* Nut remarkably broad and thick, very handsome and of first-class flavor; vigorous grower. Originated with an amateur in Silesia about 1840 and sold by Messrs. Baumann of Bolwyller."

44354. "*Pearson's Prolific.* Nut round, short, good flavor; an abundant and early bearer; produces a large number of catkins and is valuable for purposes of cross-fertilization. Introduced by Messrs. Pearson, of Chilwell."

44355. "*Prolific.* Curiously frizzled husk; nuts small but produced in large clusters, often ten to a bunch; very early, sweet, and good. Originated in a garden at Moreton, Norwich, about 1840. Sometimes called the *Frizzled nut.*"

44356. "*Red skinned.* Resembling the *White* filbert in all respects save the red skin of the kernel. Has been known since 1800."

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[1] See footnote, p. 11.

44357 and 44358. Oryza sativa L. Poaceæ. **Rice.**

From San Jose, Costa Rica. Presented by Mr. J. E. van der Laat, director, Department of Agriculture. Received February 13, 1917.

44357. A variety received without description.

44358. "This is a very prolific rice, but it has degenerated here by neglect." (*Van der Laat.*)

44359 to 44361.

From Cairo, Egypt. Seeds presented by Mr. F. G. Walsingham, horticultural division, Ministry of Agriculture, Gizeh Branch. Received March 10, 1917.

44359. Montanoa hibiscifolia (Benth.) C. Koch. Asteraceæ. **Tree daisy.**

One of the tree daisies of Central America, which is easily distinguished by its five to seven lobed leaves, which are opposite and entire. It is easily cultivated, the seeds being started indoors and the plants transferred to the open for foliage effects. It may also be propagated by cuttings. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2064,* and from *Koch, Wochenschrift des Vereines zur Beforderung des Gartenbause, vol. 7, p. 407.*)

44360. Solanum sp. Solanaceæ. **Wild potato.**

Received as *Solanum rondeletii*, for which a place of publication has not yet been found.

44361. Ziziphus spina-christi (L.) Willd. Rhamnaceæ.

A shrub, native of Palestine and Egypt, 3 to 5 meters high, with whitish, spiny branches, rounded or heart-shaped leaves 2 to 4 cm. long, and roundish, dry, astringent fruits about the size of a hazelnut. As a stock upon which to graft the common jujube this species is not satisfactory, for it has a tendency to sucker. The best use to which this shrub can be put is that of a shade tree for crops. When once established a clump can scarcely be eradicated. (Adapted from *Post, Flora of Syria, p. 201,* and from *Bagnol,* in *Bulletin de la Société Nationale d'Acclimatation de France, vol. 44, pp. 153–157.*)

44362. Diospyros kaki L. f. Diospyraceæ. **Kaki.**

From Felton, Del. Cuttings presented by Mr. J. W. Killen. Received March 29, 1917.

"This persimmon has withstood our climate for the past 25 years, though it has been killed back a number of times. It had no protection at all this past winter and does not seem to have been affected by the cold this time. It has borne a number of times. The fruits are seedless and about 2½ to 3 inches in diameter." (*Killen.*)

44363. Diospyros discolor Willd. Diospyraceæ. **Mabolo.**

From Manila, Philippine Islands. Cuttings presented by Mr. Adn. Hernandez, Director of Agriculture. Received March 28, 1917.

A common Philippine tree of medium size, 8 to 15 meters high, with dark-green leaves and roundish or somewhat flattened velvety reddish fruits about 7.5 cm. in diameter, containing cream-colored, rather dry, sweet, and aromatic flesh inclosing several large seeds. (Adapted from the *Philippine Agricultural Review, third quarter, 1916, p. 234.*)

44364. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Russia. Seed presented by Mr. W. P. Cresson, secretary of embassy in charge of the consulate at Tiflis. Received March 29, 1917.

"An inferior quality from the region of Elisavetpol." (*Cresson.*)

44365. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Peru. Seed purchased from Mr. H. P. Archer, Lima. Received March 30, 1917.

"*Palta*, from the Chanchamayo. The months of December and January are the best ones for getting paltas." (*Archer.*)

44366 to 44369.

From Bogota, Colombia. Seeds presented by Mr. M. T. Dawe, Agricultural Adviser and Director of Agriculture. Received March 30, 1917.

44366. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. Tomato.

"Seeds of the wild variety found in this neighborhood." (*Dawe.*)

44367. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

See S. P. I. No. 44251 for previous introduction and description.

44368. CARICA PAPAYA L. Papayaceæ. Papaya.

"In connection with the improvement of the papaya in southern Florida and the development of strains suitable for commercial purposes, it is desirable that varieties be obtained for trial from as many different regions as possible. The papayas of Colombia are of particular interest as coming from a region in which several wild species of Carica occur. From such a region there is always the possibility of getting hybrids or distinctly new strains." (*Popenoe.*)

44369. DOLICHOLUS PHASEOLOIDES (Swartz) Kuntze. Fabaceæ.
(*Rhynchosia phaseoloides* DC.)

"*Pionia*, a small deep-red and black seed from a creeping plant. Heaving the seed into water to soften, grinding it afterwards, and straining the paste and mixing it with sirup is said to be effective to cure epilepsy." (*Alcazar.*)

44370. CANNABIS SATIVA L. Moraceæ. **Hemp.**

From Keijo, Chosen. Presented by Mr. Nagashima, of the Government Industrial Model Farm, through Mr. L. H. Dewey, of the Department of Agriculture. Received March 31, 1917.

This number differs somewhat from other so-called Keijo strains, and from the single trial so far given it would seem to be less productive.

44371. CANNABIS SATIVA L. Moraceæ. **Hemp.**

From Seoul, Chosen. Presented by the Yokohama Nursery Co., Yokohama, Japan, who secured it from Mr. Kato, Seoul. Received through Mr. L. H. Dewey, of the Department of Agriculture, March 31, 1917.

A promising strain which produced plants 4.3 meters in height during the only trial so far accorded it.

44372 to 44374. Citrus spp. Rutaceæ.

From Lamao, Bataan, Philippine Islands. Seeds presented by Mr. P. J. Wester, Lamao Experiment Station, through Mr. Adn. Hernandez, Director of Agriculture, Manila. Received March 31, 1917.

44372 and 44373. Citrus medica L. **Citron.**

44372. The identification of this number was apparently questioned by Mr. Wester, but it seems to be at least a form of *Citrus medica.*

44373. An unnamed variety received without description.

44374. Citrus medica odorata Wester.

Tihi-tihi.

See also S. P. I. No. 44139 for further description.

44375 to 44404.

From Elstree, Herts, England. Plants presented by Hon. Vicary Gibbs, through Mr. E. Beckett, The Gardens, Aldenham House. Received March 28, 1917.

44375. Acer hookeri Miquel. Aceraceæ. **Maple.**

A tree, 40 to 50 feet high, native of the eastern Himalayas, with green, cordate, entire, finely serrate leaves 3 to 6 inches long, flowers in simple racemes 2 to 4½ inches long, and glabrous samaras with venose wings. (Adapted from *Hooker, Flora of British India, vol. 1, p. 694.*)

44376. Aesculus glabra leucodermis Sarg. Aesculaceæ. **Horse-chestnut.**

This form is characterized by the smooth, pale, often nearly white bark of the trunk and branches and is found in the southeastern United States. (Adapted from *Kew Bulletin of Miscellaneous Information, Appendix 3, 1914, p. 57.*)

44377. Alnus sitchensis Sarg. Betulaceæ. **Sitka alder.**

A tree, native of northwestern United States and Alaska, up to 40 feet in height, with a narrow head of short and nearly horizontal branches, ovate, light-green, dentate leaves 3 to 6 inches long, and staminate catkins 4 to 5 inches long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 184.*)

44378. Aralia chinensis L. Araliaceæ. **Chinese Angelica tree.**

Var. *fastigiata.* A garden variety with the branches more or less parallel with the main trunk.

44379. Aronia arbutifolia (L.) Pers. Malaceæ.
(*Pyrus arbutifolia* L. f.)

Var. *grandiflora.* A large-flowered garden variety of a bushy shrub, native of eastern North America. It is from 5 to 10 feet high, with narrowly oval leaves with dark-green upper surfaces and gray velvety lower surfaces. It has white or slightly rosy flowers produced in small corymbs and small, nearly globular red fruits.

44380. Berberis sargentiana C. Schneid. Berberidaceæ. **Barberry.**

A black-berried barberry from western Hupeh, China, reaching a height of 2 meters. It is the only evergreen barberry which has proved entirely hardy at the Arnold Arboretum, and for this reason is one of the most desirable of the recent introductions as a garden plant. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 359.*)

44375 to 44404—Continued.

44381. Berberis hookeri Lem. Berberidaceæ. **Barberry.**

An evergreen spiny Himalayan shrub 3 to 5 feet in height, with tufted, lanceolate-obovate, dark-green, leathery leaves 1 to 3 inches long with slender teeth on the margins. The pale-yellow flowers are two-thirds of an inch wide, and the black-purple, narrowly cylindrical berries often remain on the plant until the following spring. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 243.*)

44382. Betula japonica mandshurica (Regel) Winkl. Betulaceæ. **Birch.**

A white-barked tree, native of western China, 10 to 25 meters in height, with very glabrous, regularly dentate leaves. The bark is used for lining straw hats. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 461.*)

44383. Cissus striata Ruiz and Pav. Vitaceæ.
(*Vitis striata* Miquel.)

A low, shrubby evergreen vine of graceful habit, native of Chile and southern Brazil, with small, three to five foliolate, serrate leaves, yellowish flowers in many-flowered cymes, and round-flattened fruits about the size of a pea. This vine grows well in southern California. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 776.*)

44384 and 44385. Cotoneaster spp. Malaceæ.

44384. "Forrest No. 33." **44385.** "Forrest No. 5667."

44386. Cotoneaster dammeri C. Schneid.

A prostrate evergreen shrub, native of central China, with pure-white, solitary flowers, and coral-red fruits a quarter of an inch wide. It is quite hardy and is very distinct among cotoneasters for its perfectly prostrate habit. Its fruits are brightly colored, and the plant will no doubt prove useful as an evergreen carpet shrub; also for covering sunny slopes, as it is very vigorous. It occurs wild on heaths and rocky ground. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 411.*)

44387. Cotoneaster roylei Hort.

"I have labeled these [small-leaved] forms in several herbaria as [*C. racemiflora*] var. *royleana* Dipp., because I believed that these (especially *C. roylei* or *royleana* Hort.) corresponded with the spontaneous material; but I am now dubious about this and I am holding out the spontaneous forms as the var. *kotschyi*. The named garden forms remain confused." (*Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 754.*)

44388. Crataegus nitida (Engelm.) Sarg. Malaceæ. **Hawthorn.**

A tree, up to 30 feet high, from Illinois and Kansas, with spreading branches, coarsely serrate leaves, and dark dull-red fruits about half an inch long. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 883.*)

44389. Diervilla japonica (Thunb.) DC. Caprifoliaceæ.
"Forrest No. 7882."

44375 to 44404—Continued.

44390. Hypericum sp. Hypericaceæ. **St.-John's-wort.**

"Wilson No. 256." "From cliffs and thickets, Wushan Hsien, eastern Szechwan, at an altitude of 1,000 meters, 1907. A shrubby plant, 6 cm. tall, with yellow flowers." (*Sargent, Plantae Wilsonianae, vol. 3, p. 452.*)

44391. Jasminum sp. Oleaceæ. **Jasmine.**

"Forrest No. 11472."

44392. Larix dahurica principis-rupprechtii (Mayr) Rehd. and Wils. Pinaceæ. **Larch.**

A tree from northern China, with beautiful pink cones up to 1½ inches long and leaves up to 1¾ inches in length. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1823.*)

See also S. P. I. No. 42194 for further description.

44393. Laurocerasus officinalis Roemer. Amygdalaceæ. (*Prunus laurocerasus* L.) **Cherry laurel.**

Var. *camelliaefolia.* A garden variety with leaves of ordinary size, but curled and twisted. Curious but not ornamental. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 240.*)

44394. Lonicera nitida Wilson. Caprifoliaceæ. **Honeysuckle.**

An evergreen shrub from western China, up to 6 feet high, with upright branches, broadly oval or oblong glossy leaves, fragrant whitish flowers one-third of an inch long, and purple fruits. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1907.*)

44395. Lonicera pileata Oliver. Caprifoliaceæ. **Honeysuckle.**

A much-branched, low, evergreen or partially deciduous shrub from central and western China, about a foot high, with slender branches, oblong, lance-shaped, dark, shining-green leaves half to an inch long, and pale-yellow flowers in almost sessile pairs. It is quite hardy in England. (Adapted from *Curtis's Botanical Magazine, pl. 8060.*)

44396. Abies sp. Pinaceæ. **Fir.**

"Wilson No. 6744."

44397. Picea koyamai Shiras. Pinaceæ. **Spruce.**

A Japanese tree, up to 30 feet in height, with bright reddish brown branchlets, bluish white, 4-sided sharp-pointed leaves one-third to half an inch long, and light brownish green cones 1½ to 2½ inches long with broadly oval scales. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2621.*)

44398. Piptanthus concolor Harrow. Fabaceæ.

"Wilson No. 885." A bush, 1 to 1.6 meters tall, found in western Szechwan, China, at elevations up to 3,500 meters. It has alternate, trifoliate leaves, almost the same color above as below, with white hairs on the margins; yellow pealike flowers; and silky pods about 6 mm. long. (Adapted from *Gardeners' Chronicle, December 16, 1916, p. 289.*)

44399. Pyracantha gibbsii A. Jackson. Malaceæ.

A shrub from western China up to 14 feet high, nearly spineless, with large, ovate-oblong, variable leaves up to 3 inches long and abundant fruits about 7 mm. in diameter. The leaves are commonly used by the Chinese for tea. (Adapted from *Gardeners' Chronicle, December 30, 1916, p. 309.*)

44375 to 44404—Continued.

44400. Rosa omeiensis Rolfe. Rosaceæ. **Rose.**

A stout, branched shrub, from 3 to 10 feet high, with young shoots covered with dense bristles and the older stems armed with stout straight thorns. The long green leaves are composed of 9 to 13 sharply serrate leaflets, and the white flowers, which are over an inch in diameter, occur singly on short lateral twigs. The bright-red fruits are up to half an inch in length, and their yellow stalks are very striking in autumn. These fruits are said to be eaten in China, where the plant grows at an elevation of 8,000 to 9,500 feet. It thrives in good loamy soil and may be propagated from the freely produced seeds. (Adapted from *Curtis's Botanical Magazine, pl. 8471.*)

44401. Rubus irenaeus Focke. Rosaceæ.

A prostrate evergreen shrub, native of central and western China, beset with small decurved prickles and having white flowers, large red fruits, and simple leaves, suggesting those of coltsfoot. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 460.*)

See also S. P. I. No. 40595 for further description.

44402. Rubus lasiostylus dizygos Focke. Rosaceæ.

An erect deciduous shrub, native of central China, 4 to 6 feet high, with waxy blue-white stems, compound leaves, small, rosy flowers, and agreeably acid, red fruits an inch in diameter. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 462.*)

See also S. P. I. No. 42587 for further description.

44403. Styrax wilsonii Rehder. Styracaceæ.

A very pretty, small, compact Chinese shrub with alternate, oval, irregularly dentate leaves up to two-thirds of an inch long, white flowers in axillary and terminal racemes, appearing when the plant is but a few inches high and 2 or 3 years old, and gray-velvety, roundish fruits about one-third of an inch long. It is best propagated by seeds, although layering may be used. On one occasion, in the nursery at Kew, England, this shrub withstood a temperature of 12° F. (Adapted from *Curtis's Botanical Magazine, pl. 8444.*)

44404. Viburnum hupehense Rehder. Caprifoliaceæ.

A deciduous shrub, native of Hupeh, China, with coarsely serrate, roundish oval leaves, and flowers in large flat corymbs. The red fruit is ovoid, from one-third to two-fifths of an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 650.*)

See also S. P. I. No. 42197 for further description.

44405. Nypa fruticans Wurmb. Phœnicaceæ. **Nipa palm.**

From Manila, Philippine Islands. Seeds presented by Mr. Adn. Hernandez, director, Bureau of Agriculture. Received March 27, 1917.

A creeping Philippine palm with a stout branching rootstock and large leaves 5 to 10 meters long. The sap is collected from the immature inflorescence and made principally into alcohol, and to a less extent into vinegar and sugar. A good preserve is made by boiling the immature seeds in sugar. (Adapted from the *Philippine Agricultural Review, third quarter, 1916, p. 174.*)

For an illustration of the nipa palm in fruit, see Plate VI.

44406. DAHLIA sp. Asteraceæ. Tree dahlia.

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Numbered March, 1917.

"(No. 106. From Tactic, Alta Vera Paz.) A double white variety of the common tree dahlia. The plant was not seen in bloom, and there is a possibility that it may not be true to name, but the Indian from whom it was obtained assured me that it was the double white form and not the common single pink. The flowers of the double white variety (which seems to be the most beautiful form of all) are used extensively by the Indians of Tactic for decorating the images of the saints. This seems to me to be a very promising plant for cultivation in California. It is likely that this is a cultivated form of *Dahlia maxoni* Safford." (*Popenoe.*)

44407 to 44417.

From Buenos Aires, Argentina. Seeds presented by the Jardin Botanico. Received March 10, 1917.

44407. AEXTOXICON PUNCTATUM Ruiz and Pav. Euphorbiaceæ.

A Chilean tree, sometimes reaching a height of 40 feet, with beautiful dark-green foliage. It thrives in both the dry and moist portions of Chile. (Adapted from *note of W. F. Wight, May 7, 1913.*)

See also S. P. I. No. 36123 for further description.

44408. CHENOPODIUM sp. Chenopodiaceæ.

A very small seeded variety, apparently allied to *Chenopodium ambrosioides.*

44409. GEVUINA AVELLANA Molina. Proteaceæ. **Avellano.**

A Chilean evergreen tree, reaching a height of 12 meters. Its large, dark-green, glossy pinnate leaves and axillary racemes of white flowers make a very pleasing combination during the winter. The pleasant-flavored nuts resemble the hazelnut in taste and are eaten raw or cooked. The wood is suited for general carpentry and for cabinetwork, the medullary rays giving it a pleasing appearance. (Adapted from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia, p. 39,* and from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1335.*)

44410. MYRCIARIA CAULIFLORA (Mart.) Berg. Myrtaceæ. **Jaboticaba.**

" One of the best indigenous fruits of Brazil, and at the same time one of the most curious and interesting, due to its habit of producing its fruits directly upon the trunk and larger branches (cauliflory). Several species are grown under the name of *jaboticaba*, and they are still somewhat confused botanically, but it appears that most of the plants common in cultivation belong either to *Myrciaria cauliflora* or *M. jaboticaba*, fruits of the latter being distinguishable from those of the former by the presence of a slender stem.

" The *jaboticaba* occurs in southern Brazil, both wild and cultivated. It is a very handsome tree, reaching a height of 35 or 40 feet, with a dense dome-shaped crown. The leaves are small, lanceolate, light green in color, and the flowers are white, with four petals and a conspicuous tuft of stamens. The fruits are produced in the greatest abundance and are the size of large grapes, with a tough, leathery skin, white, juicy pulp of rather acid, aromatic flavor, and two to four flattened oval

44407 to 44417—Continued.

seeds. The resemblance between the *jaboticaba* and some of the grapes of the Muscadine group, e. g., the *James*, is very striking, not only in the general appearance of the fruit but also in flavor.

"The *jaboticaba* prefers a soil that is rich and deep. It is rather slow of growth, coming into bearing after six or eight years. It withstands slight frosts and gives promise of being successful in southern Florida and perhaps also in sheltered localities throughout southern California. At the present time seed propagation is the only means of multiplication which is commonly employed, but inarching or some other means of propagation should be utilized to perpetuate good varieties." (*Popenoe.*)

44411. NAGEIA ANDINA (Poepp.) F. Muell. Taxaceæ.
(*Podocarpus andina* Poepp.)

A Chilean tree, up to 20 feet in height, with upright or somewhat spreading branches, indistinctly 2-ranked, linear, dark-green leaves half an inch to 1½ inches long, flowers in spikes, and fruits without fleshy receptacles. It is propagated by seeds or by cuttings made from almost ripened wood under glass and grows out of doors only in the Southern States and California. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2725.*)

44412. NOTHOFAGUS ANTARCTICA (Forst.) Oerst. Fagaceæ.
Antarctic beech.

A large deciduous South American tree, found from Tierra del Fuego northward to Concepcion, Chile. It has cordate or broadly oval irregularly dentate leaves half an inch to 1¼ inches long, and the staminate flowers appear in May singly, in pairs, or in threes. Propagation is by layering. Few trees have greater elegance and distinction than this when young. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 98.*)

44413. SOPHORA TETRAPTERA J. Miller. Fabaceæ.

Pelú. A Chilean tree, attaining a height of 10 meters, with green, pinnate leaves, golden yellow flowers, and indehiscent, 4-winged, cork-covered pods. It prefers to grow near rivers, which afford excellent opportunities for the dissemination of the corky pods. The exceedingly hard wood is used for plow points, wheels, etc. (Adapted from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia, p. 56.*)

44414. TRICONDYLUS DENTATUS (Ruiz and Pav.) Kuntze. Proteaceæ.
(*Lomatia dentata* R. Br.)

Avellanillo. A Chilean tree, up to 10 meters in height and 30 cm. in diameter, with alternate, oval, dentate leaves, abbreviated lateral racemes of yellowish white flowers, and papery follicles. Of no industrial value. (Adapted from *Brown, Transactions of the Linnean Society of London, vol. 10, p. 201,* and from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia, p. 41.*)

44415. TRICONDYLUS OBLIQUA (Ruiz and Pav.) Kuntze. Proteaceæ.
(*Lomatia obliqua* R. Br.)

Badal. A Chilean tree, with alternate, smooth, serrate leaves, yellowish white flowers in axillary racemes, and papery follicles inclosing winged seeds. Attains a height of 8 to 19 meters, with a diameter of 1 meter. (Adapted from *Brown, Transactions of the Linnean Society of London, vol. 10, p. 201,* and from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia, p. 39.*)

44407 to 44417—Continued.

44416. PHYLLOCLADUS sp. Taxaceæ.

"Tree or shrub with the branchlets flattened and expanded into rigid and coriaceous, toothed or lobed, leaflike cladodia. The true leaves are reduced to linear scales." (*Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2607.*)

44417. WEINMANNIA TRICHOSPERMA Cav. Cunoniaceæ. **Tineo.**

A Chilean and Peruvian tree, 15 to 18 meters high, with opposite, unequally pinnate leaves with winged petioles, aromatic white flowers in axillary racemes, and small oval capsules. The great fragrance of the flowers attracts many insects, which lay their eggs in the bark of the tree and produce larvæ which bore into the trunk and make the wood unfit for use. (Adapted from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia, p. 52, fig. 30.*)

44418 to 44425.

From Elstree, Herts, England. Plants presented by Hon. Vicary Gibbs, through Mr. E. Beckett, The Gardens, Aldenham House. Received March 27, 1917.

44418. BERBERIS AQUIFOLIUM Pursh. Berberidaceæ. **Barberry.**

Var. *vicarii.* A variety originating in the gardens of Hon. Vicary Gibbs and presumably named for him.

"The best of the mahonias." (*Gibbs.*)

44419. CEANOTHUS HYBRIDUS Hort. Rhamnaceæ.

Var. *Glorie de Versailles.* A half-evergreen shrubby garden variety, distinguished by its large panicles of bright-blue flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 696.*)

44420. CEANOTHUS HYBRIDUS Hort. Rhamnaceæ.

Var. *Perle rose.* A garden variety, with beautiful pink flowers. (Adapted from *V. Lemoine & Fils, Catalogue et Prixcourtant, 1914, p. 38.*)

44421. COTONEASTER sp. Malaceæ.

"Forrest No. 32."

44422. COTONEASTER SALICIFOLIA FLOCCOSA Rehd. and Wils. Malaceæ.

A half-evergreen shrub from western China, up to 15 feet high, with oblong to lance-oblong bright-green leaves; flowers in dense corymbs; and 3-seeded bright-red fruits nearly one-fourth of an inch in diameter. The value of this shrub lies in the ornamental effect of the fruits in autumn. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 867.*)

44423. MALUS BACCATA (L.) Moench. Malaceæ. **Crab apple.**
(*Pyrus baccata* L.)

Var. *Cashmere* crab. A horticultural variety of the Siberian crab, presumably from Kashmir, India.

44424. POPULUS SZECHUANICA C. Schneid. Salicaceæ. **Poplar.**

A common tree in the forests of Szechwan, China, growing to a large size, with massive branches and stout branchlets. It has very large, ovate, elongated or rounded leaves. It is hardy in the northeastern United States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2763.*)

44418 to 44425—Continued.

44425. Pyrus sp. Malaceæ. Pear.

A variety received without description.

44426. Rosa odorata (Andr.) Sweet. Rosaceæ. Rose.

One of two roses associated with S. P. I. No. 22449. Renumbered for convenience in distribution.

"A rose which Mr. Meyer sent in from China, which he collected in a garden at Pautungfu, Chihli Province. For several years past it has attracted considerable attention as a pillar rose. The form that Mr. Meyer collected produces small, double, white flowers with pale pink centers; it blooms quite freely. Although it is an attractive rose, the discovery by Mr. Edward Goucher of its peculiar usefulness as a stock on which to bud or graft other roses now constitutes its chief interest to rose growers. Cuttings of the young wood grow so readily that with ordinary care 90 to 95 per cent of those put in an ordinary propagating bench will root. It has also been found that the vigorous young canes, often 5 to 8 feet long, can be used as a stock upon which to insert between each two leaves or eyes, in the manner of ordinary shield or slip budding, buds of any varieties it is desired to propagate. Later, when these buds have united, the canes are made into ordinary cuttings, each with a bud of the desired variety, which will root readily in slight bottom heat in an ordinary sand propagating bench, while the inserted buds will give rise to strong, healthy plants.

"Further, this rose has been successfully used as a grafting stock. The young canes are cut into suitable lengths and upon these are cleft-grafted or 'worked' scions or pieces of wood of the desired variety. The completed grafts are then potted singly in small pots, which are placed in an ordinary sweat box used for young grafted stock and maintained at a temperature of 75° to 80° F. Simultaneously the cuttings root and the grafts grow, and as many as 90 per cent of the cuttings thus made have succeeded." (*Peter Bisset.*)

44427 to 44431.

From Canton, China. Seeds presented by Mr. G. Weidman Groff, Canton Christian College. Received March 13, 1917.

44427 and 44428. Brassica spp. Brassicaceæ. Mustard.

44427. "*T'ai ts'eng shao po* (Taai ts'eng shiu paak)."

44428. "*Pen t'ai* (Poon tei)."

44429 to 44431. Raphanus sativus L. Brassicaceæ. Radish.

44429. "*Hua mien* (Fa min)."

44430. "*Pa chih.*"

44431. "*Tung kua.*"

44432. Medicago sativa L. Fabaceæ. Alfalfa.

From Shensi, China. Presented by Dr. A. C. Selmon, superintendent of the North China Mission of Seventh-Day Adventists, Nanking, China. Received January 2, 1917.

"Some months ago I was traveling in the northwest of China in the Province of Shensi, where the climate is very dry. There I found that the farmers raised a plant somewhat resembling alfalfa, which also grew wild. I found a specimen of it growing on the top of the city wall (60 feet high) at Sianfu, the capital of Shensi Province. It makes a very good rough feed for stock." (*Selmon.*)

44433 to 44436.

From Oran, Salta, Argentina. Seeds presented by Mr. S. W. Damon. Received March 7, 1917.

44433. GOURLIEA DECORTICANS SUBTROPICALIS Lillo. Fabaceæ.

Chañar. A tall tree, native of northern Argentina, with a crooked, tapering trunk about 1.4 meters (4½ feet) in diameter and yellowish, coarse, soft wood, which is not used commercially. This variety differs from the typical species in the tapering trunk and the manner in which the bark peels off. (Adapted from *Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 43.*)

44434 and 44435. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ. (*P. juliflora* DC.) **Algaroba.**

The algaroba is a leguminous tree, native to Argentina, usually 30 to 40 feet tall, with sweetish succulent pods which are fed to cattle. The wood is used for general carpentry.

44434. *Algarroba negro.* A form with dark-colored pods.

44435. *Algarroba blanco.* A form with light-colored pods.

44436. ZIZIPHUS MISTOL Griseb. Rhamnaceæ. **Mistol.**

A spiny tree, native of Argentina, up to 30 feet in height, with oval leathery short-stemmed leaves about an inch long and edible black fruits about one-third of an inch in diameter. The hard, red wood is not used commercially. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 6, p. 3548,* and from *Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 85.*)

44437 and 44438.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received March 30, 1917.

44437. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

"(No. 90a. From Antigua, Guatemala, February 26, 1917.) Seeds of a small native tomato which is commonly grown and used in the high lands of Guatemala as well as in some parts of the low lands. The plants are exceedingly vigorous and productive; the fruits are up to an inch or slightly more in diameter and of good flavor. While I have not seen this plant in the wild state, it is said by the natives to occur as a wild plant." (*Popenoe.*)

44438. ABUTILON sp. Malvaceæ.

"(No. 91. From Zacapa, Guatemala, March 15, 1917.) Cuttings of a handsome malvaceous shrub, 6 to 10 feet high, which is abundant in the mountains back of Zacapa at elevations of about 2,000 feet and has also been seen toward Gualan, at a low elevation in the lower Motagua valley. At this season of the year the plants are almost devoid of foliage and are a mass of brilliant yellow flowers. Individually the flowers resemble a single hibiscus, but are slightly smaller, being about 2 inches broad; they are golden yellow in color, with a crimson center. The plants bloom through a considerable period. For trial in southern California and Florida." (*Popenoe.*)

44439. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Guatemala. Budwood collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received January to March, 1917.

"(No. 92. Avocado No. 15.) *Nabal.*[1] For productiveness combined with desirable form and excellent quality of fruit, this variety seems particularly worthy of trial in the United States. While not a large avocado, it is excellent in every way, having a smooth green surface, rich yellow flesh of good flavor, and a seed not unduly large in comparison to the size of the fruit. In addition, it seems to be slightly earlier in season than the average.

"The parent tree was accidentally destroyed in June, 1917, by a laborer who was planting coffee. It stood among coffee bushes in the Finca Santa Lucia, 7a Calle Poniente, near the Alameda de Santa Lucia, Antigua, Guatemala. The soil in this finca is a rich, black, sandy loam of volcanic origin, deep and apparently very fertile. The tree was young, probably not more than 6 or 7 years old. It stood about 25 feet high, with a trunk 6 inches in diameter at the base, branching 10 feet from the ground. The crown was open, scantily branched, with little bearing wood. The young growths were strong, stout, vigorous, and the budwood was excellent, having large, vigorous eyes. The variety should not be difficult to propagate, and the indications are that it will be a good grower, though it is impossible to speak with certainty in regard to this latter point. The wood is rather tough for an avocado.

"The elevation of Antigua, 5,100 feet, is not great enough to insure unusual hardiness in a variety, but it seems reasonable to expect that varieties from this elevation will be as hardy as the average of the Guatemalan race. There is no way of determining whether they are hardier than the average until they are tested in the United States.

"The parent tree did not flower in 1917. Since flowers are nearly always produced at the same time as the spring flush of growth, however, it may be suspected that the flowering season of the variety will be rather late, since the spring growth did not appear this season until the end of March. The heavy crop of fruit produced last year probably prevented the tree from flowering this season. When first examined, in October, 1916, the tree was carrying more than 300 fruits. It ripened this crop—an unusually large one for a tree of such small size, when the size of the fruit is considered—in February and March, 1917, at which time they were all picked. They would probably have remained on the tree until June if they had been allowed to do so.

"The fruit is nearly spherical in form, of convenient size for serving a half fruit as a portion. It weighs 10 ounces or a little more. The surface is smooth, bright green, very attractive in appearance. The skin is sufficiently thick to make the fruit a good shipper and is of the characteristic Guatemalan texture. The flesh is rich yellow in color, quite free from fiber or discoloration, and very rich in flavor. The seed is tight in the cavity and slightly below the average in size. Considered from all points of view, it bears every indication of being an excellent little fruit.

"A formal description of the variety follows:

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[1] This and other varietal names for Mr. Popenoe's Guatemalan avocados are arbitrarily selected from appropriate words in the Maya language. It has seemed wiser thus to give these plants names which would indicate the origin of the variety than to give them English names that could convey no hint of the source whence the plants had come.

"Form almost spherical; size below medium, weight about 10 ounces, length 3½ inches, breadth slightly over 3 inches; base scarcely extended, the stem inserted almost squarely without depression; apex rounded, with a slight depression around the stigmatic point; surface undulating to finely pebbled, dull green in color with numerous very minute yellowish dots; skin not very thick, scarcely up to one-eighth of an inch over any portion of the fruit, separating readily from the flesh, woody, brittle; flesh yellow, greenish toward the skin, free from fiber or discoloration, of firm, smooth texture and rich flavor; quality excellent; seed rather small, nearly spherical in form, weighing slightly more than 1 ounce, tight in the seed cavity, with both seed coats adhering closely to the cotyledons." (*Popenoe.*)

44440. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Guatemala. Budwood collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received March to June, 1917.

"(Nos. 94, 110, 116, 138. Avocado No. 17.) *Nimlioh.* It is rare to find a large-fruited avocado which is at the same time very productive. In this variety, however, these two characteristics are both combined to an unusual degree. In addition, the quality of the fruit is excellent, the flesh being rich yellow in color, free from discoloration, and of very rich flavor. The habit of the tree and the character of the wood indicate that the variety may not be a very strong grower.

"The parent tree is growing in a sitio belonging to Trinidad Hernandez, Callejon de Concepción No. 28, Antigua, Guatemala. The elevation is approximately 5,100 feet. The soil is a very sandy loam, black, loose, deep, and undoubtedly very fertile. The tree stands close to the wall, with no other large trees close to it. It is very poorly cared for. Its age is not known, but it is probably 15 years. It is about 25 feet high, the trunk is 14 inches thick at the base, and the first branches 12 feet from the ground. The crown is broadly oval, of good form, and rather dense. It looks, however, as though the variety might be a diffuse grower when young, with long heavy shoots inclined to droop. The wood is unusually brittle, and the budwood very poor, the eyes being stalked or losing their bud scales and falling early. The tree is badly attacked by leaf-gall, and there are a good many scale insects on it.

"The elevation of Antigua, 5,100 feet, is not great enough to insure unusual hardiness in a variety, and pending a test in the United States it can only be assumed that this avocado is of about average hardiness for the Guatemalan race.

"The flowering season is from the latter part of February to the end of March. According to the owner of the tree, it always bears at least a few fruits, but it is to be expected that a tree which produces such a crop as this one did in 1917 will not bear heavily the following year. While an accurate count was not made, the crop this season was estimated at 300 to 400 fruits. The normal size of the fruit is between 2 and 3 pounds, but owing probably to the large number on the tree many do not develop to a greater size than 1 pound. Probably good culture and thinning would result in a crop of uniformly large fruits. The season of ripening is earlier than some, most of the fruits being fully ripe in February and March.

"In form this avocado is broadly oval, usually somewhat oblique. The surface is deep green and rather rough, while the skin is thick and woody. The flesh is rich cream yellow in color, smooth and entirely free from fiber or discoloration. The flavor is of the very best, rich, bland, and pleasant. The seed, while large, is not large in comparison to the great size of the fruit, and the proportion of flesh to seed is quite satisfactory.

"Those who are interested in large avocados should by all means give this variety a trial. Its only visible defect is the tendency to produce weak branches, but if pruning and good culture can produce a reasonably shapely and vigorous growth the variety seems likely to prove of great value in the United States.

"A formal description of the fruit follows:

"Form broadly oval, sometimes oblong-oval, and always more or less oblique; size extremely large, perfectly developed fruits weighing 36 to 45 ounces and measuring 5½ to 6 inches in length by 4½ to 5 inches in breadth; stem rather short and very stout, inserted obliquely without depression; base slightly flattened obliquely, not decidedly so; apex rounded to obliquely flattened; surface heavily pebbled in most instances, occasionally lightly pebbled, deep green in color, with numerous irregular, large, yellowish dots; skin moderately thick, one-sixteenth of an inch toward the base of the fruit and one-eighth of an inch toward the apex, separating readily from the flesh, coarsely granular and brittle; flesh firm, oily, smooth, rich cream yellow, tinged with green toward the skin, free from fiber or discoloration and very rich, pleasant flavor; quality excellent; seed medium sized, roundish conic or oblate-conic, weighing 4 ounces, tight in the cavity with both seed coats adhering closely." (*Popenoe.*)

44441 and 44442.

From Tucuman, Argentina. Presented by Mr. E. F. Schultz, horticulturist, Tucuman Experiment Station. Received March 27, 1917.

44441. CAESALPINIA MELANOCARPA Griseb. Cæsalpiniaceæ. **Guayacán.**

"The *guayacán* is a very hard-wooded tree, tall and spreading, with smooth white bark. The heavy lumber is used in the manufacture of heavy 2-wheeled carts and for similar objects. It is also cut for railroad ties and for fence posts, lasting in this capacity 30 years and more. It is frequently difficult to drive nails into even the green wood. The seed pods contain a great deal of tannin and are used for ink manufacture." (*Schultz.*)

44442. ZIZIPHUS MISTOL Griseb. Rhamnaceæ. **Mistol.**

A spiny tree from Argentina, up to 30 feet in height, with oval, leathery, hoary pubescent leaves about an inch long and edible black fruits one-third of an inch in diameter, with large stones. The wood is red and hard, but is not known to be of commercial use.

See S. P. I. No. 40853 for previous introduction.

44443. PERSEA AMERICANA Mill. Lauraceæ. Avocado.

(*P. gratissima* Gaertn. f.)

From Guatemala, Guatemala. Seeds purchased by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Numbered March, 1917.

A collection of seeds sent in for stock purposes.

44444 and 44445. Persea americana Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Antigua, Guatemala. Seeds collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received March 7, 1917. Quoted notes by Mr. Popenoe.

The plants grown from these seeds are not to be budded, but will be distributed as seedlings to those who wish to plant a seedling tree of good parentage on the possibility of obtaining a valuable new variety.

44444. "(No. 88a. From the Finca el Manchen, February 16, 1917.) The variety is very productive. The fruit is pyriform, about a pound in weight, deep purple in color and slightly rough on the surface; the skin is thick and the flesh of deep yellow color and rich flavor. The seed is moderately small, tight in the cavity."

44445. "(No. 89a. Avocado No. 16. From the Finca Santa Lucia, February 16, 1917.) This is a fruit of good large size, with a rather small seed. It is a productive variety, the parent tree, which is about 20 feet high with a slender crown and little fruiting wood, carrying 100 fruits this season.

"Form oblong-spherical; size above medium to large, weight 15 to 17 ounces, length 4¼ inches, breadth 3¾ inches; base flattened, with the stem inserted slightly to one side in a shallow, flaring cavity; apex obliquely flattened; surface smooth to undulating, deep purple in color, almost shining, with numerous rather large yellowish dots; skin moderately thick, slightly over one-eighth of an inch, coarsely granular, separating readily from the flesh, but very brittle; flesh pale cream color, tinged pale green toward the skin, of mild, pleasant flavor; quality good; seed small in comparison to size of fruit, decidedly oblate, weighing about 2½ ounces, tight in the cavity, with both coats adhering closely. Season February to June."

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